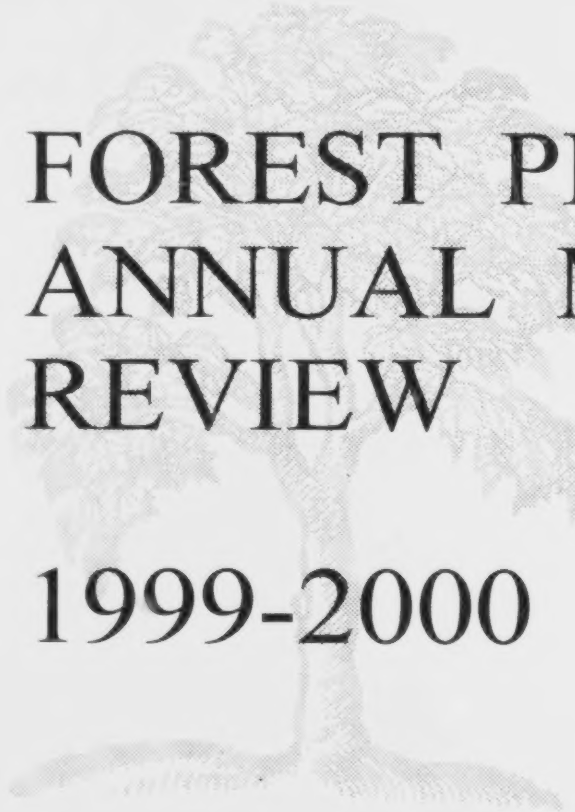
United Nations
Economic Commission for Europe

Food and Agriculture Organization
of the United Nations

ECE/TIM/BULL/53/3

Timber Bulletin - Volume LIII (2000), No. 3



FOREST PRODUCTS ANNUAL MARKET REVIEW

1999-2000

UNITED NATIONS

ECE/TIM/BULL/53/3

United Nations Economic Commission for Europe
Food and Agriculture Organization
of the United Nations

Timber Section
Geneva, Switzerland

Timber Bulletin - Volume LIII (2000), No. 3

FOREST PRODUCTS ANNUAL MARKET REVIEW 1999-2000

UNITED NATIONS
New York and Geneva, 2000

NOTE

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Any data provided under the heading "Yugoslavia" relate to the Federal Republic of Yugoslavia which, in accordance with General Assembly Resolutions 47/1 and 47/229, cannot continue automatically the membership of the former Socialist Federal Republic of Yugoslavia.

ABSTRACT

The *Forest Products Annual Market Review, 1999-2000* provides general and statistical information on forest products markets in the UN-ECE region of Europe, North America and the Commonwealth of Independent States. The *Review* begins with a general overview of the forest products markets in the region followed by a description of the economic situation in the region. Five special chapters are included this year: "Effects of the December 1999 storms on European timber markets," "Poland's forest products markets," "China's forest products markets" "Secondary processed forest products markets" and "Engineered wood products – Production, trade, consumption and outlook." The developments in seven standard sectors are described for markets of: wood raw materials, sawn softwood, sawn hardwood, wood-based panels, paper and paperboard, certified forest products and tropical timber. For each sector, production, consumption and trade are considered and relevant material on specific markets is included. Tables included with the text present detailed information and annex tables contain further reference material.

ECE/TIM/BULL/53/3

UNITED NATIONS PUBLICATIONS
ISSN 0259-4323

CONTENTS

Page

Preface and acknowledgements ...... *xi*
Data sources ...... *xiii*
Contributors to the publication ...... *xiv*
Explanatory notes ...... *xvi*
Symbols and abbreviations used ...... *xvi*

Chapter 1 OVERVIEW OF FOREST PRODUCTS MARKETS IN 1999 AND EARLY 2000 1
1.1 ECE region developments 2
1.2 Trends in forest products markets 4
1.3 Timber Committee forecasts 4

Chapter 2 ECONOMIC FACTORS AFFECTING FOREST PRODUCTS MARKETS 5
2.1 General economic developments 6
2.2 Construction sector developments 17

Chapter 3 EFFECTS OF THE DECEMBER 1999 STORMS ON EUROPEAN TIMBER MARKETS 23
3.1 Introduction 24
3.2 Damage magnitude: the equivalent of 2 years' harvest in 3 days! 26
3.3 Market effects: potential enormous imbalances mitigated through sector solidarity 28
3.4 Comparisons with 1990 market effects: similar problems and solutions 34
3.5 Assistance by governments: quick and multi-dimensional responsiveness 36
3.6 Positive outcomes? 37
3.7 Conclusion 37

Chapter 4 POLAND'S FOREST PRODUCTS MARKETS 39
Secretariat introduction 39
4.1 General economic developments 40
4.2 Forest resources 41
4.3 Institutional framework for forest and forest industries 42
4.4 Effects of the transition process 43
4.5 Integration into the EU 44
4.6 Forest industry – production and consumption 44
4.7 Trade of wood and wood products 46
4.8 Certified forest products 49
4.9 Prospects for wood industry 50

Chapter 5 CHINA'S FOREST PRODUCTS MARKETS 51
Secretariat introduction 51
5.1 General socio-economic development 51
5.2 Forest resources 53
5.3 Institutional framework 54
5.4 Analysis and development of production of China's major forest products, 1981 to 1999 54
5.5 Development of China's forest product trade from 1981 to 1999 58
5.6 China's forests product trade in 1999 63
5.7 Consumption of major forest products, with international comparisons 66
5.8 Projections of demand and supply of China's forest products to 2010 67

Chapter 6 SECONDARY PROCESSED WOOD PRODUCTS MARKETS 71
Secretariat introduction 71
6.1 Introduction 72
6.2 Secondary processed wood products 72
6.3 Main flows and trade patterns 74
6.4 Market profiles 76
6.5 Conclusion 80

Chapter 7 WOOD RAW MATERIAL – PRODUCTION, TRADE AND CONSUMPTION 81
Introduction 82
7.1 ECE region developments 82
7.2 Developments in EU/EFTA 86
7.3 Developments in "Other Europe" 87
7.4 Developments in the CIS 87
7.5 Developments in North America 89

Chapter 8 SAWN SOFTWOOD – CONSUMPTION, SUPPLY AND TRADE 91
8.1 Introduction 92
8.2 ECE region market developments 92
8.3 North American market developments 93
8.4 European market developments 98
8.5 CIS market developments 102
8.6 Conclusion 102

Chapter 9 SAWN HARDWOOD – CONSUMPTION, SUPPLY AND TRADE 105
9.1 Introduction 105
9.2 ECE market developments 105
9.3 North American market developments 106
9.4 European market developments 110
9.5 Russian Federation market developments 112
9.6 Conclusion 112

Chapter 10 WOOD-BASED PANELS – SUPPLY, TRADE AND CONSUMPTION 113
10.1 Overview of wood-based panels markets 114
10.2 Plywood 115
10.3 Oriented Strand Board 117
10.4 Particle board 121
10.5 Fibreboard 125
10.6 Medium Density Fibreboard 125
10.7 Hardboard 129
10.8 Insulating board 130

Chapter 11 ENGINEERED WOOD PRODUCTS – PRODUCTION, TRADE, CONSUMPTION AND OUTLOOK 131
Secretariat note 132
11.1 Introduction 132
11.2 Current market situation 133
11.3 Production, consumption and trade statistics 139
11.4 Outlook for EWPs 143
11.5 Conclusions 145

Chapter 12 PAPER, PAPERBOARD AND WOODPULP – PRODUCTION, CONSUMPTION AND TRADE 147
Secretariat introduction 148
12.1 Introduction 148
12.2 Paper and paperboard 148
12.3 Demand and supply of woodpulp and other fibre 154

Chapter 13 CERTIFIED FOREST PRODUCTS MARKETPLACE 157
13.1 Introduction 157
13.2 What are CFPs? 158
13.3 What are the objectives of certification? 158
13.4 Demand for CFPs 158
13.5 Supply of CFPs 160
13.6 Mutual recognition between schemes 163
13.7 Conclusion 164

Chapter 14 TROPICAL TIMBER DEVELOPMENTS 165

- Secretariat introduction 166
- 14.1 Introduction 166
- 14.2 Production 166
- 14.3 Exports 169
- 14.4 Imports 173
- 14.5 Prices 177
- 14.6 Secondary processed wood products 179
- 14.7 Conclusion 182

ANNEXES

APPARENT CONSUMPTION TABLES

- Annex table 1 Sawn softwood apparent consumption 183
- Annex table 2 Sawn hardwood apparent consumption 184
- Annex table 3 Particle board apparent consumption 185
- Annex table 4 Plywood apparent consumption 186
- Annex table 5 Fibreboard apparent consumption 187
- Annex table 6 Chemical woodpulp apparent consumption 188
- Annex table 7 Paper and paperboard apparent consumption 189
- Annex table 8 Graphic papers apparent consumption 190
- Annex table 9 Sanitary and household papers apparent consumption 191
- Annex table 10 Packaging materials apparent consumption 192
- Annex table 11 Other paper and paperboard apparent consumption 193

Components of forest product groups 194

Forest products terminology 196

- General terms 196
- Transactions 196
- Primary products 197
  - Roundwood 197
  - Sawnwood 198
  - Wood-based panels 198
  - Wood pulp 199
  - Paper and paperboard 201
- Secondary processed wood products 202
- Engineered wood products 204

Countries in the ECE Region 206

Sources of information used in the *Forest Products Annual Market Review* 207

Special chapters in former *Forest Products Annual Market Reviews* 209

Some facts about the Timber Committee 210

UN-ECE/FAO Publications 211

Reader survey 212

LIST OF TABLES PRESENTED IN THE TEXT

1.1.1 Apparent consumption of sawnwood, wood-based panels and paper and paperboard 3
2.1.1 Annual changes in real GDP in western Europe and North America, 1997-2000 8
2.1.2 GDP growth rates for the ECE transition economies, 1997-2000 15
2.2.1 Developments and outlook for the construction sector in Europe, 1998-2002 18
2.2.2 Gross construction outputa in the ECE transition economies, 1996-1999 21
3.2.1 December 1999 windthrow versus 1998 annual removals in Europe 26
3.3.1 Resolution of windthrown timber in one forest area in Switzerland, 2000 32
3.3.2 Imports of beech roundwood by Germany, 1999-2000 32
3.3.3 Exports of beech roundwood from Germany, 1999-2000 33
3.3.4 Exports of beech sawnwood from Germany, 1999-2000 33
3.3.5 Imports of beech roundwood by Germany, 1999-2000 33
3.3.6 Exports of coniferous roundwood from Germany,1999-2000 34
3.3.7 Imports of coniferous roundwood by Germany,1999-2000 34
4.1.1 Polish economic indicators, 1996-1999 40
4.1.2 Consumption vs. gross national product in Poland, 1995-1999 41
4.2.1 Structure of forest ownership in Poland 41
4.2.2 Removals from Poland's forests, by forest ownership, 1990-1998 42
4.6.1 Wood products production, 1989, 1998, 1999 45
4.6.2 Production of forest industry in Poland, 1991-1999 46
4.6.3 Wood products consumption in Poland, 1989, 1998, and 1999 46
4.7.1 Exports and imports of wood products in Poland, 1989 and 1999 47
4.7.2 MDF consumption, production and trade in Poland, 1994-1998 48
4.7.3 OSB consumption, production and trade in Poland, 1994-1998 48
4.7.4 Sawn softwood exports from Poland, 1999 48
4.7.5 Sawn hardwood exports from Poland, 1999 48
4.7.6 Sawn softwood imports by Poland, 1999 48
4.7.7 Sawn hardwood imports by Poland, 1999 48
5.4.1 Production of China's major forest products, 1981-1999 57
5.5.1 Volume, value and ranking of major commodity imports in China, 1997-1999 60
5.5.2 China's import value of forest products and the changes of its precedence in global imports of forest products in 1991 and 1997 61
5.5.3 China's roundwood import sources, 1996-1998 62
5.5.4 China's forest products exports (volume), 1995-1999 63
5.5.5 China's forest products exports (value), 1995-1999 64
5.6.1 China's forest product exports, 1999 65
5.8.1 Projections of China's roundwood utilization to 2010 67
5.8.2 Projections of Supply and Demand of China's Industrial Roundwood in 2010 68
5.8.3 Forecast of China's imports of forest products, 2010 69
6.2.1 List of products mentioned in the report and their codes 73
6.3.1 Imports and exports of SPWPs by ECE countries, 1998 74
6.3.2 Main importers of secondary wood processed products (ECE countries), 1998 75
6.3.3 Main exporters of secondary processed wood products (ECE countries), 1998 75
6.3.4 Main importers of furniture (ECE countries), 1998 75
6.3.5 Main exporters of furniture (ECE countries), 1998 75
6.4.1 EU furniture market, 1998 77
6.4.2 United States, SPWP imports, excluding furniture,1998 ranked by value 79
6.4.3 Main exporters of joinery and carpentry to the United States, 1998 80
6.4.4 Main suppliers of profiled wood to the United States, 1998 80
6.4.5 United States, SPWP exports 1998 82
7.1.1 Ratio between ECE and global roundwood removals, 1995-1998 83
7.1.2 Production (removals) of roundwood by selected countries in the ECE Region, 1995-1999 84
7.1.3 Industrial roundwood trade flows, exports by destination, average 1995-1998 84
7.1.4 Industrial roundwood trade flows, imports by countries of origin, average 1995-1998 84
7.1.5 Roundwood exports and imports by selected countries in the ECE Region, 1997-1999 85
7.2.1 German roundwood net trade, 1995-1999 87
7.2.2 Exports and imports of wood residues, chips and particles, 1995-1999 88
8.2.1 Sawn softwood balance in the ECE region, 1995-1999 93

8.3.1 Production of sawn softwood, 1996-1999 ... 94
8.3.2 Exports and imports of sawn softwood, 1996-1999 ... 96
8.4.1 Sawn softwood prices in France, 2000 ... 99
8.4.2 Baltic countries sawn softwood production, 1997-1999 ... 101
8.4.3 Baltic countries sawn softwood exports, 1997-1999 ... 101
8.4.4 Baltic countries sawn softwood imports, 1997-1999 ... 101
8.4.5 Baltic countries sawn softwood apparent consumption, 1997-1999 ... 101
8.4.6 Exports of sawn softwood from Germany, 1999-2000 ... 101
8.4.7 Imports of sawn softwood by France, 1999-2000 ... 102
8.5.1 Imports of sawn softwood by Germany, 1999-2000 ... 102
9.2.1 Sawn hardwood balance in the ECE region, 1995-1999 ... 106
9.3.1 Production of sawn hardwood, 1996-1999 ... 107
9.3.2 Exports and imports of sawn hardwood, 1996-1999 ... 108
9.4.1 Sawn hardwood prices in France, 2000 ... 112
10.1.1 Apparent consumption of wood-based panels (excluding veneer sheets) in Europe, the Russian Federation and North America, 1995-1999 ... 114
10.2.1 Plywood balance in Europe, the Russian Federation and North America, 1995-1999 ... 116
10.2.2 Production and trade of Plywood, 1996-1999 ... 117
10.3.1 New OSB capacity announcements in North and South America, 2000-2002 ... 118
10.3.2 Structural panel residential market shares, 1995 and 1998 ... 118
10.3.3 OSB balance in Europe, the Russian Federation and North America, 1995-1999 ... 120
10.3.4 Announced OSB capacity in Europe, 2000-2002 ... 120
10.3.5 Production and trade of OSB, 1996-1999 ... 121
10.4.1 United States and Canadian particle board annual rates of growth, 1961-2004 ... 123
10.4.2 Particle board balance (excluding OSB) in Canada and the United States, 1998-1999 ... 123
10.4.3 Particle board, including OSB, balance in the ECE region, 1995-1999 ... 123
10.4.4 Production and trade of particle board, including OSB, 1996-1999 ... 124
10.5.1 Fibreboard balance in Europe, the Russian Federation and North America, 1995-1999 ... 125
10.5.2 Production and trade of fibreboard, 1996-1999 ... 126
10.6.2 North American MDF annual rates of growth, 1973-2004 ... 127
10.6.1 Production and trade of MDF, 1996-1999 ... 128
10.7.1 Production and trade of hardboard, 1996-1999 ... 129
10.8.1 Production and trade of insulating board, 1996-1999 ... 130
11.2.1 Examples of efficient applications using EWPs ... 136
11.2.2 Sources of Japan's imports of glulam, 1997-1999 ... 138
11.2.3 Japanese housing starts by method of construction ... 138
11.2.4 Estimated glulam consumption in Japan by type of housing ... 138
11.3.1 Production and trade of I-beams, 1995-1999 ... 140
11.3.2 Production and trade of LVL, 1995-1999 ... 140
11.3.3 LVL Consumption, 1995-1999 ... 141
11.3.4 Production and trade of glulam, 1995-999 ... 142
11.3.5 Apparent consumption of glulam, 1995-1999 ... 143
12.2.1 Consumption of paper and paperboard in Europe, the Russian Federation and North America, 1996-1999 ... 144
12.2.2 Production of paper and paperboard in Europe, the Russian Federation and North America, 1996-1999 ... 150
12.3.1 Production of woodpulp in Europe, the Russian Federation and North America, 1996-1999 ... 155
13.4.1 ECE region members of the WWF Global Forest and Trade Network, 2000 ... 160
13.5.1 Certified forestland in Canada, 1999-2000 ... 162
13.5.2 Summary of forest area certified in the ECE region ... 163
14.2.1 Tropical forest products production, 1997-1999 ... 167
14.3.1 Composition of exports by producing regions, 1997-1999 ... 170
14.3.2 Tropical timber export ratios, 1997-1999 ... 170
14.3.3 Tropical forest products exports, 1997-1999 ... 170
14.4.1 Tropical proportion of total imports by major ITTO importers, 1998 ... 173
14.6.1 Direction of trade of SPWPs for main partners, 1997 ... 181

LIST OF GRAPHS PRESENTED IN THE TEXT

1.1.1 Quarterly changes in real GDP in western Europe and North America, 1997-1999 6
2.1.2 World commodity prices, January 1990-February 2000 7
2.1.3 The Harmonized Index of Consumer Prices of the euro area, January 1996-February 2000 10
2.1.4 Real effective exchange rates, January 1995-January 2000 11
2.1.5 Consumer price indices in the United States, January 1996-February 2000 12
2.2.1 Housing starts in United States, 1996-2000 19
2.2.2 Housing starts in Japan, 1996-2000 20
2.2.3 Share of wood and non-wood housing in Japan, 1993-1999 20
3.1.1 Windstorm damage in European forests, 1950-1999 25
3.2.1 Windthrow versus annual removals in Europe, 1999 26
3.3.1 Sawlog prices in Switzerland, 1998-2000 29
3.3.2 Pulpwood and energy wood prices in Switzerland, 1998-2000 29
3.3.3 Spruce and fir sawnwood prices in Switzerland, 1998-2000 30
3.3.4 Sawn hardwood prices in Germany, 1998-2000 30
3.3.5 Sawn softwood prices in Germany, 1998-2000 30
3.3.6 Additional costs of spruce and fir logs from strom damaged forests in France, 1999-2001 31
3.4.1 Roundwood removals in selected European countries, 1988-1993 35
3.4.2 Roundwood imports in Europe, 1988-1993 35
3.4.3 Roundwood exports in Europe, 1988-1993 35
4.6.1 Sawnwood production in Poland, 1989-1999 45
4.6.2 Wood-based panels production in Poland, 1989-1999 45
4.6.3 Pulp, paper and paperboard production in Poland, 1989-1999 46
4.7.1 Export of industrial roundwood in Poland, 1995-1999 47
4.7.2 Export of wood-based panels in Poland, 1995-1999 49
5.2.1 Forest categories in China, 1999 53
5.2.2 Forest growing stock in China by forest categories, 1999 53
5.2.3 Annual planting areas in China, 1960-1999 54
5.4.1 Roundwood production in China, 1990-1999 55
5.4.2 Roundwood utilization in China, 1988-1996 55
5.4.3 Sawnwood production in China, 1990-1999 56
5.4.4 Wood-based panels production in China, 1990-1999 56
5.4.5 Production of pulp, paper and paperboard in China, 1990-1999 56
5.5.1 China's roundwood and sawnwood imports by volume, 1981-1999 58
5.5.2 China's roundwood and sawnwood imports by value, 1981-1999 58
5.5.3 China's imports of plywood and veneer by volume, 1981-1999 59
5.5.4 China's imports of plywood and veneer by value, 1981-1999 59
5.5.5 China's imports of Pulp, waste paper and paperboard by volume, 1981-1999 59
5.5.6 China's imports of Pulp, waste paper and paperboard by value, 1981-1999 59
5.5.7 China's major forest product imports cumulative, 1981-1988 60
5.5.8 China's major forest product imports in 1998 61
5.5.9 Prices of roundwood, sawnwood and plywood, 1981-1999 63
6.1.1 World trade of SPWPs versus primary products, 1991-1998 72
6.1.2 ITTO consumer imports of primary and secondary tropical timber products, 1991-1998 72
6.4.1 EU15 balance of trade for selected SPWPs, including wooden furniture, 1989-1997 76
6.4.2 EU15 balance of trade, 1989-1999 76
6.4.3 EU15 exports of SPWPs, 1989-1997 76
6.4.4 EU15 exports of SPWPs, 1997 breakdown by products 77
6.4.5 EU15 production of wood flooring, 1985-1997 77
6.4.6 European wood flooring production by type, 1990-1999 78
6.4.7 EU15 trade of mouldings, 1989-1997 78
6.4.8 EU15 trade of barrels, 1989-1997 78
6.4.9 United States imports of SPWPs, 1991-1998 79
6.4.10 United States exports of SPWPs, 1991-1998 79
6.4.11 United States trade of SPWPs, excluding furniture,1991-1998 79
7.1.1 Development of roundwood production in the ECE area by regions, 1995-1999 83
7.1.2 Development of apparent roundwood consumption in the ECE area by regions, 1995-1999 86
7.1.3 Development of roundwood production in the ECE area by product groups, 1995-1999 86

7.4.1 United States hardwood log prices, 1994-1999 89
8.2.1 Consumption of sawn softwood, 1995-1999 92
8.2.2 ECE region sawnwood exports to Japan, 1996-2000 93
8.3.1 North American sawn softwood prices, 1994-2000 95
8.3.2 United States sawn softwood import sources (without Canada), 1999 95
8.3.3 United States sawn softwood import sources from Europe, 1999 97
8.4.1 Sawn softwood prices in Sweden, 1994-2000 99
9.2.1 Consumption of sawn hardwood, 1995-1999 106
9.3.1 United States sawn hardwood export destinations, 1999 109
9.3.2 United States sawn hardwood prices, 1996-2000 109
9.4.1 Parquet production in Europe, 1985-1999 111
9.4.2 French and German beech sawnwood prices, 1995-2000 111
10.2.1 Life cycles of plywood, 1945-2000 115
10.2.2 North American structural panel demand and capacity, 1969-2000 115
10.2.3 Consumption of plywood, 1994-1999 116
10.3.1 Life cycle of OSB, 1970-2010 118
10.3.2 OSB prices and costs versus utilization rate,1990-2002 119
10.3.3 North American structural panel composite prices, 1994-2000 119
10.3.4 United States OSB prices, 1995-2000 119
10.3.5 OSB production capacity in Europe, 1994-2000 120
10.4.1 Life cycle of particle board, 1955-2000 122
10.4.2 United States particle board prices, 1995-2000 122
10.4.3 Consumption of particle board, 1994-1999 122
10.5.1 Consumption of fibreboard, 1994-1999 125
10.6.1 Life cycle of MDF, 1960-2005 127
10.6.2 MDF production capacity in Europe, 1994-2000 127
11.1.1 Regional markets for glulam and LVL, 1999 132
11.1.2 I-beam production in North America and Europe, 1999 132
11.1.3 Consumption of sawnwood, wood-based panels and EWPs in Europe and North America, 1998 133
11.2.1 Wood frame construction 133
11.2.2 Regional fibre cost (sawlog stumpage), 1990-1999 133
11.2.3 North American manufactured housing vs. wood frame construction 136
11.2.4 Engineered wood product applications in North America 136
11.2.5 Glulam production in Europe, 1999 137
11.2.6 Japanese LVL production, 1995-1998 139
11.2.7 Estimated LVL consumption in Australia, 1999 139
11.3.1 LVL end uses by region 141
11.3.2 Regional glulam production and imports, 1999 141
11.3.3 European glulam demand, 1999 143
11.4.1 EWP "Product Life Cycle" 144
11.4.2 Forecast EWP growth in North America, 1992-2004 144
11.4.3 Forecast growth of European glulam production, 1990-2003 145
12.2.1 Capacity utilization rates for paper and paperboard in some European countries, 1996-1999 151
12.2.2 United States monthly trade-weighted dollar index and monthly United States trade deficit, 1996-2000 151
12.2.3 United States monthly average price index and domestic purchases of paper and paperboard, 1996-2000 152
12.2.4 United States price index and capacity utilization rates for paper and paperboard, 1996-2000 153
12.2.5 United States exports and capacity utilization for paper and paperboard, 1996-2000 153
12.2.6 Finnish export prices for paper and paperboard, 1996-2000 154
12.3.1 United States average price indices for market pulp and recovered paper, 1994-2000 156
13.5.1 Area of FSC-certified forestland, 1995-2000 161
13.5.2 Distribution of FSC-certified forestland, 2000 161
13.5.3 ISO 14001 environmental management system certificates, 1995-1998 161
13.5.4 Potential certified forestland in Canada, 1999-2003 163
14.2.1 Major tropical log producers, 1997-1999 166
14.2.2 Major producers of tropical sawnwood, 1997-1999 167
14.2.3 Major tropical veneer producers, 1997-1999 168
14.2.4 Major tropical plywood producers, 1997-1999 169
14.3.1 Major tropical log exporters, 1997-1999 171
14.3.2 Major sawnwood exporters, 1997-1999 171
14.3.3 Major tropical veneer exporters, 1997-1999 172

14.3.4 Major tropical plywood exporters, 1997-1999 172
14.4.1 Imports of tropical wood products, 1995-1999 174
14.4.2 Major tropical log importers, 1997-1999 174
14.4.3 Major tropical sawnwood importers, 1997-1999 175
14.4.4 Major tropical veneer importers, 1997-1999 176
14.4.5 Major tropical plywood importers, 1997-1999 176
14.5.1 Tropical log prices, 1997-2000 177
14.5.2 Tropical sawnwood prices, 1997-2000 178
14.5.3 Tropical plywood prices, 1997-1999 178
14.6.1 ITTO Consumer imports of primary and secondary tropical timber products, 1991-1998 179

PREFACE AND ACKNOWLEDGEMENTS

The ECE/FAO *Forest Products Annual Market Review, 1999-2000* provides a statistical analysis and general information on forest products markets in the UN-ECE region, including Europe, North America and the Commonwealth of Independent States, for the period 1999 through mid 2000. The *Review* serves as a background document for the ECE Timber Committee's annual market discussions (9 and 10 October 2000). Furthermore it provides readers with comprehensive analysis on recent developments in the forest and forest product sector in the ECE region and its trading partners.

The *Review* begins with an overview of the forest products markets, followed by an appraisal of economic conditions influencing the ECE region, including construction sector influences. In-depth discussion of sector developments is included for roundwood, sawn softwood, sawn hardwood, wood-based panels, woodpulp, pulp, paper and paperboard, certified forest products as well as tropical timber markets. These are the sectors covered in the Committee's discussions.

Five special chapters are included in this year's *Review*: *Poland's forest products markets, China's Forest Products Markets, Secondary Processed Wood Products Markets and Engineered Wood Products – Production, Trade, Consumption and Outlook. Effects of the December 1999 Storms on European Timber Markets* describes the results in 2000 of catastrophic storms which felled nearly 200 million m^3 of roundwood in Europe's forests.

Poland's Forest Products Markets is the continuation of the *Review* series focusing on one ECE region country. We extend our gratitude to Drs. Wladyslaw Strykowski, Deputy Director, and Ewa Ratajczak, Head of the Wood Economics Department, Wood Technology Institute, Poland, for authoring this enlightening chapter.

China's Forest Products Markets, continues a *Review* series highlighting an important forest products trading country from outside the ECE region. Chinese imports of wood have multiplied to become the world's third wood importer. We thank Drs. Kunshan Shi, Fengming Lin and Mr. Zhisheng Xu, Chinese Academy of Forestry, for their noteworthy contribution.

Secondary Processed Wood Products was written by Mr. Pierre-Marie Desclos, a consultant in wood products. We express our gratitude to him for the attention he brings to the importance of further-processed products to the *Review* which has heretofore focused on primary products.

The last special chapter, *Engineered Wood Products – Production, Trade, Consumption and Outlook* describes the exciting new market outlet for products which are changing construction methods and being increasingly substituting for solid wood. We sincerely appreciate the outstanding work of Dr. Al Schuler, USDA Forest Service and Mr. Craig Adair, APA – The Engineered Wood Association, who will also contribute at the market discussions.

Drs. Steve Johnson and Michael Adams, International Tropical Timber Organisation, have again written an informative chapter for the *Review* on tropical timber markets. We thoroughly appreciate this co-operative effort with ITTO expertise.

Drs. Peter Ince and Henry Spelter, Forest Products Laboratory, USDA Forest Service contributed substantially to two chapters, pulp and paper and wood-based panels, respectively, adding new dimensions to these analytical chapters. We sincerely thank them for their assistance and look forward to future collaboration.

The primary information for this *Review* comes from the responses to a new questionnaire sent out jointly by the ECE Timber Section, the FAO Forestry Department, EUROSTAT and ITTO (see "data sources"). In addition to the primary data, the *Review* is based on a wealth of secondary data obtained though trade journals, trade associations, annual reports, and experts cited in the text. Readers' suggestions for additional sources of information are welcome.

Increasingly valuable market information is available on the World Wide Web and we thank the generous contributors who provide information for international use. A Market Information Service has been established and is being developed on the Timber Committee website at: http://www.unece.org/trade/timber/mis.htm and this *Review* may be found there along with the TIMBER database on which this publication is based.

The analysis included here was performed in a concentrated period due to delays in receiving and preparing statistics for the analysis. Members of the *Review* Team, both in the Timber Section and outside, are to be commended for their perseverance. We apologize to those readers who rely on a paper copy, or on a version in French or Russian, in preparation for the Timber Committee market discussions. The document was completed late which delayed translation, printing, duplication and distribution. We hope that those delegates who have the electronic version in

August 2000 find this method of distribution useful. We will also provide an executive summary, hopefully in 3 languages, on the website.

The *Review* will be complemented in October 2000 by the *Timber Bulletin* issue 6, *Forest Products Markets in 2000 and Prospects for 2001*, which will contain the results of the Timber Committee's market discussion. All statistics collected in the new joint ECE/FAO/EUROSTAT/ITTO questionnaire are presented systematically in issue No. 2, *Forest Products Statistics, 1995-1999*. The other issues of the *Timber Bulletin* are listed at the end of the *Review*.

Readers familiar with past *Reviews* will also notice that the appearance has been improved thanks to the design assistance of Ms. Marilyn Langfeld, Graphics Designer. The graphics look has also been improved thanks to Messrs. Antti Koskinen and Perttu Pohjonen, forest products marketing graduate students at University of Helsinki, who were interns with the Timber Section during production of the *Review*. Mr. Koskinen also developed the annex from the former standard apparent consumption s by adding definitions, lists of former special chapters, list of countries in the ECE region, product flow charts, a reader survey and a list of ECE/FAO publications. Mr. Pohjonen further developed a planning system for production of the *Review*. Our experience of engaging interns during the production of the publication, which has grown enormously in scope, has been extremely positive and prospective interns are encouraged to apply to work with the Timber Section.

Complementary data tables for wood raw materials and tropical timber may be found on the website version of the *Review*. Data tables for secondary processed wood products will be published in a forthcoming *Geneva Timber and Forest Discussion Paper* as well as appearing on the website with their Discussion Paper.

We welcome your feedback via the attached reader survey on this *Review* and its changes.

The *Review* was produced as a joint effort by 27 people. Ed Pepke led and coordinated the work. The individual chapters had the following principal authors: 1. Ed Pepke; 2. Kit Prins (drawing on the *Economic Survey of Europe* prepared by the ECE Economic Analysis Division); 3. Ed Pepke; 4. Wladyslaw Strykowski and Ewa Ratajczak (Poland); 5. Kunshan Shi, Fengming Lin and Zhisheng Xu (China); 6. Pierre-Marie Desclos (Italy); 7. Volker Sasse[1]; 8. Ed Pepke; 9. Ed Pepke; 10. Jorge Najera and Henry Spelter (United States); 11. Al Schuler and Craig Adair (United States); 12. Peter Ince (United States) and Kit Prins; 13. Eric Hansen, Keith Forsyth and Heikki Juslin (United States, United Kingdom and Finland); and 14. Steve Johnson and Michael Adams (Japan). Messrs. Antti Koskinen and Perttu Pohjonen (Finland) performed market research and produced all the graphics and the annex. Mr. Alex McCusker[2] produced the statistics with assistance on the database by Mr. André Sceia, consultant. Ms. Sefora Kifle assisted with price data preparation and other market research. Ms. Romi Chopra was responsible for preparation, formatting, integration and presentation of the text, tables and graphs and was aided at the end by Ms. Isabelle Hay[3]. This manuscript was completed on 10 August 1999. I would like to personally thank all members of the Team, whether in Geneva or far away, for their devoted efforts in producing this *Forest Products Annual Market Review*.

Ed Pepke
Forest Products Marketing Specialist
UN-ECE/FAO Timber Section
Trade Division, Economic Commission for Europe
Palais des Nations
CH - 1211 Geneva 10, Switzerland
Tel. + 41 22 917 2872
Fax: + 41 22 917 00 41
E-mail: info.timber@unece.org

---

[1] The Timber Section welcomes Dr. Volker Sasse, Forestry Officer, to the "Review Team". His primary responsibilities in the Section are in European Forest Sector Outlook Studies.

[2] Mr. Alex McCusker has joined the Timber Section as statistician and is a key member of the Team.

[3] We also welcome Ms. Isabelle Hay, Secretary, to the Section and the Team.

DATA SOURCES

The data on which the *Review* analysis is based are collected from official national correspondents[4] through the FAO/ECE/Eurostat/ITTO Joint Forest Sector Questionnaire. Within the 55-country ECE region, data for EU and EFTA countries are collected and validated by Eurostat and for other ECE countries by ECE/FAO Geneva.

Distributed in April and May 2000, the questionnaire requested data for 1998 and 1999. Revised in light of 1999 experiences, it: 1. redefined sawnwood (excluded further-processed sawnwood such as mouldings), 2. clarified treatment of MDF and OSB, 3. corrected cross references to the Harmonized System, 4. disaggregated paper and paperboard, and 5. introduced recovered fibre pulp. The new system has inevitably introduced some discontinuities into the data series, not all of which could be resolved before publication. Therefore in some instances data are not comparable with pre-1998 series. The secretariats are working with national correspondents, to whom we are grateful for their valuable assistance, to resolve discrepancies. National correspondents met in May 2000 to learn about and critique the revised questionnaire and follow-up meetings are envisaged.

The statistics for this *Review* are from a new, dynamic TIMBER database system which is currently under development. The system stores, retrieves, calculates and validates data and will also be used for production of the statistical *Timber Bulletins*. As the database is continually being updated, any one publication's analysis is only a snapshot of the database at that particular time.

The secretariat is grateful that correspondents provided actual statistics for 1999 and in the absence of formal statistics, their best estimates. Therefore all statistics for 1999 are subject to confirmation next year. The secretariat has made estimates, where necessary, to obtain product and regional totals. Trend-based formulas were used, rather than the former practice of simply repeating previous data. Therefore some totals in this *Review* differ from those in earlier *Reviews*, although in most cases the differences are not significant. Although estimates are distinguished from official statistics in the database, it was not possible to identify estimates in this *Review*. We intend to correct this and readers are asked to draw any inconsistencies to the attention of the Geneva secretariat. The statistics received for 1998 and 1999 are the most reliable and interesting part of the data set and this *Review* analysis focuses on the change between these two years.

Thus the database is in a state of permanent development. With our partner organizations and national correspondents, we believe strongly that the quality of the international statistical base is steadily improving for analysis of the forest products sector. Our goal is to have a single, complete, current database, validated by national correspondents, with the same figures available from FAO in Rome, Eurostat in Luxembourg, ITTO in Yokohama and ECE/FAO in Geneva. We are convinced that the data set used in the *Review* is the best available anywhere as of July 2000.

In addition to the official statistics received by questionnaire, trade association and government statistics are used to complete the analysis for 2000. A number of trade journals were used for supplementary information, as well as institutions and experts, including national correspondents. Most of these sources are cited in the text. The Internet has become a key source of information for producing this *Review*.

---

[4] Correspondents are listed in the companion *Timber Bulletin*, "Forest Products Statistics, 1995-1999".

CONTRIBUTORS TO THE PUBLICATION

The secretariat would like to express its sincere appreciation for the information received from the following people in preparation of the *Forest Products Annual Market Review*. The base data for the *Review* were supplied by country statistical correspondents, who are acknowledged by name in the companion issue of the *Timber Bulletin* "Forest Products Statistics, 1995-1999." We regret any omissions.

Martti Aarne, Finnish Forest Industries Federation, Finland
Craig Adair, APA – The Wood Engineered Association, United States
Michael Adams, ITTO, Japan
Ilse van den Akker, European Panel Federation, Belgium
Mart-Jan Schelhaas, Altera, Netherlands
Urs Amstutz, Economie Forestière Association Suisses, Switzerland
Jean-Marie Barbier, Fédération Nationale des Syndicats de Propriétaires Forestiers Sylviculteurs, France
Rick Barrett, Hardwood Review, United States
Tom Berger, Ohio Division of Forestry, United States
François Bessières, Ministère de l'Agriculture et de la Pêche et de l'Alimentation, France
Eric Boilley, Le Commerce du Bois, France
Michael Buckley, Consultant, United Kingdom
Dominique Coutrot, Union des Industries des Panneaux de Process, France
Paul Delduc, Ministère de l'Agriculture et de la Pêche, France
Johannes Dengg, Federal Ministry of Food, Agriculture and Forestry, Germany
Pierre-Marie Desclos, Consultant, Italy
Håkan Ekström, Wood Resources International Ltd, United States
Jean Fayes, retired from Organisation Européenne des Scieries, France
Keith Forsyth, VELUS A/S, United Kingdom
Thomas Grünenfelder, Swiss Forest Agency, Switzerland
Riitta Hänninen, Finnish Forest Research Institute, Finland
Eric Hansen, Oregon State University, United States
Hermann Huckert, Federal Ministry of Food, Agriculture and Forestry, Germany
Patrick Hum, Industry Canada, Canada
Peter Ince, USDA Forest Service, United States
Lloyd C. Irland, The Irland Group, Ireland
Steve Johnson, ITTO, Japan
Heikki Juslin, University of Helsinki, Finland
Hikojiro Katsuhisa, Japan Wood Products Information & Research Center, United States
Jean-Pierre Kiekens, Sustainable Forestry & Certification Watch, Canada
Eric Kilby, Confederation of European Paper Industries, Brussels
Antti Koskinen, University of Helsinki, Finland
Marilyn Langfeld, Graphic Designer, Switzerland
Fengming Lin, Chinese Academy of Forestry, China
Mike Martin, APA – The Engineered Wood Association, United States
John McLaughlin, Coillte Teoranta – the Irish Forestry Board, Ireland
Alexander Moiseyev, European Forest Institute, Finland
Sanna Myrttinen, Swedish Wood Association, Sweden

Heiner Ollmann, Federal Research Centre for Forestry and Wood Products, Germany
Lars Göran Olsson, Swedish Wood Association, Sweden
Arvids Ozols, Ministry of Agriculture, Latvia
Heikki Pajuoja, Finnish Forest Research Institute, Finland
Perttu Pohjonen, University of Helsinki, Finland
Ewa Ratajczak, Wood Technology Institute, Poland
Jean-François Rime, Association Suisse des Scieries et de l'Industrie du Bois, Switzerland
Bob Romig, Ohio State University, United States
Antti Rytkönen, Foreco OY, Finland
Al Schuler, USDA Forest Service, United States
Kunshan Shi, Chinese Academy of Forestry, China
Jeff Serveau, Industry Canada, Canada
Matti Sihvonen, Finnish Forest Industries Federation, Finland
Henry Spelter, USDA Forest Service, United States
Wladyslaw Strykowski, Wood Technology Institute, Poland
Miguel Torodo, Union des Sylviculteurs du Sud de l'Europe, Spain
Pierre Vaneret, Fédération Nationale du Bois, France
David Venables, American Hardwood Export Council, United Kingdom
Esa-Jussi Viitala, Finnish Forest Research Institute, Finland
John Wadsworth, Intermark, United Kingdom
Mikael Westin, Swedish Wood Association, Sweden
Nelson Y.S. Wong, International Forest List, Malaysia
Zhisheng Xu, Chinese Academy of Forestry, China
Marco Zanetti, Swiss Forestry Agency, Switzerland

EXPLANATORY NOTES

"Apparent consumption" is calculated by adding a country's production to imports and subtracting exports. Apparent consumption volumes are not adjusted for levels of stocks because all countries cannot report stocks.

"Net trade" is the balance of exports and imports and is positive for net exports, i.e. when exports exceed imports, and is negative for net imports, i.e. when imports exceed exports. Trade data for fifteen European Union countries include intra-EU trade, which is often estimated by the countries.

The term "central and eastern Europe countries", used exclusively for presentational convenience, includes Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia, The former Yugoslav Republic of Macedonia and Yugoslavia.

For the first year, European totals include the Baltic countries of Estonia, Latvia and Lithuania, which has increased European totals from previous *Reviews*.

The term "softwood" is used synonymously for "coniferous." "Hardwood" is used synonymously for terms "non-coniferous" or "broadleaved" wood. More definitions appear in the annex.

SYMBOLS AND ABBREVIATIONS USED

-	nil or negligible
..	not available
$	United States dollar unless otherwise specified
C$	Canadian dollar
CIS	Commonwealth of Independent States
ECE	Economic Commission for Europe
EFTA	European Free Trade Association
EQ	equivalent of wood in the rough
EU	European Union
EWP	engineered wood products
FOB	free on board
GDP	gross domestic product
IMF	International Monetary Fund
kph	kilometres per hour
m^2	square metre
m^3	cubic metre (solid volume of roundwood or processed product)
m.t.	metric ton
N.A.	Not applicable
NIEs	Newly industrializing economies
OPEC	Organization of Petroleum Exporting Countries
SPWP	secondary processed wood products
sq	square
USDA	United States Department of Agriculture
WWF	World Wide Fund for Nature

Chapter 1

Overview of Forest Products Markets in 1999 and early 2000

Highlights

- Consumption of forest products in the ECE region once again reached record levels in 1999.
- Strong economies in Europe and North America in 1999 and early 2000 resulted in record production and trade although there were signs of slower growth ahead.
- The Commonwealth of Independent States had not recovered from the 1998 Russian economic crisis and although domestic consumption of sawnwood fell, it rose for panels and paper, while exports of most products increased.
- Prices were weak for some products and sub-regions, for example sawn softwood and panels in North America where new capacity outstripped the rise in consumption.
- Central and eastern European countries exported more roundwood and primary-processed products as well as increased exports of value-added products such as furniture.
- Life-cycle analysis for wood-based panels confirmed continued market penetration for OSB and MDF, moderate growth for particle board and stagnation for plywood in North America.
- The ECE region has the majority of the world's certified forestland and new certification systems for sustainable forest management are being implemented with possibilities for mutual recognition between systems. With the new certificates, the demand for certified products is less than the potential supply.
- Windstorms in December 1999 felled 3 years' worth of timber in Europe causing chaos in forests and forest products markets for roundwood in early 2000.
- China is rapidly increasing forest products imports with important benefits for ECE region exporters.
- Japan began recovery from the 1997/1998 Asian economic crisis and imports from the ECE region improved.

1.1 ECE region developments

Overall in the ECE region (Europe, North America and the CIS), forest products markets were at record levels in 1999 due to strong domestic and export demand for primary wood products (roundwood, sawnwood, panels, pulp and paper). Residential and non-residential construction was at high levels in North America and Europe in 1999 and early 2000, resulting in strong markets at the beginning of the millennium. Recovery from the 1998 economic crisis in the Russian Federation persisted into 1999, however, depending on the product, either lower consumption or higher production led generally to greater exports.

Consumption of forest products in North America rose sharply in 1999, by over 5% for sawnwood, panels and paper and paperboard, raising the roundwood required by 38.7 million m^3 (table 1.1.1). Sawnwood consumption moved up to 731 million m^3 and 56 million m^3 worth of panels were consumed for construction and non-structural uses. Sawnwood trade between Canada and the United States was at record levels in 1999, as were imports to North America. The strong US dollar weakened export opportunities in some markets, but not in all products. Paper and paperboard consumption increased to new records at 104 million m^3.

European economies were generally stronger in 1999 and forest products markets were at record consumption. Sawnwood consumption rose by over 3% to 105 million m^3 and trade within Europe was high as well as exports to Asia and the United States. Paper and paperboard consumption rose too, to a record 105 million m^3. Panels consumption, boosted by structural and non structural uses rose by half as much, 1.5%, to 52 million m^3. Prices remained depressed in 1999, but they have somewhat strengthened in 2000.

Production of sawnwood in the Russian Federation fell to 13 million m^3, and as domestic consumption fell even more, greater volumes were exported. Consumption of panels rose but did not overcome the drop in 1998. Paper and paperboard consumption rose most, by 29.3% to 3 million m^3, moving back near the level in 1993.

Removals of roundwood from forests escalated in 1999 but remained well below annual growth as determined by the recently published study by the Temperate and Boreal Forest Resources Assessment.[1] The study shows higher levels of removals would still be possible under sustainable forest management.

Japan and some other countries in Asia began recovering from the 1997 and 1998 economic crisis. The Chinese demand for wood products is growing fast due to a combination of factors, especially the decrease domestic harvests for flood control and the increasing consumption consummate with opening borders and a rising standard of living for the 1.3 billion population. Exporters from across the region capitalised on these opportunities.

The export markets outside of Europe have become especially important in 2000 in light of the December 1999 windstorms which toppled 193 million m^3 of roundwood in France, Germany and Switzerland (as well as other countries). There were multiple market consequences of this disaster for the countries involved: 1. a sudden, enormous supply, equivalent to 2 to 3 years annual harvest; 2. the disruption of forest management plans in the damage zone and postponement of those outside the zone; 3. the collapse in roundwood prices, but not necessarily further processed product prices; and 4. the panic to remove usable wood before destruction by insects, disease or fire. In mid 2000, thanks in part to governments' actions, and due primarily to a strengthened solidarity in the sector, many countries struck by the storms had restored order to forests and forest products markets. Nevertheless, the effects of the storms will have serious repercussions for years in the hardest hit communities and regions.

Central and eastern European countries exhibited strong export orientation for roundwood and sawnwood and were making strides to develop value-added processing such as furniture manufacturing.

In North America the number of houses built was at near record levels, even though mortgage rates began to rise in 1999. Constructed essentially from wood, i.e. sawnwood and panels, the 1.7 million homes in the US, plus another 150,000 in Canada also meant a strong demand for millwork, mouldings and furnishings. These in turn necessitated increased forest removals, up slightly to 686 million m^3. However this is below levels of the late 1980s when the US exported more wood.

The decline in US exports and the concurrent rise in production were not satisfactory to meet demand and imports of roundwood, sawnwood, pulp and paper rose. European sawnwood is becoming more prevalent in the US; however Canada maintains a 95% market share.

The paper and paperboard sector in Europe and North America saw strong growth in demand, and higher levels of production and consumption. Pulp's share of raw material used for paper and paperboard continued to decline to the profit of recovered paper and non-fibre raw materials such as coatings. Companies continued to merge and expand across regions, creating several truly global players. For both paper and pulp, profitability was restored as capacity growth was restrained, bringing up the capacity utilisation rate, and influencing prices upwards.

---

[1] *Forest Resources of Europe, CIS, North America, Australia, Japan and New Zealand, 2000 (ECE/TIM/SP/17).*

The wood-based panels market is dynamic and when combined with engineered wood products the future of wood products markets becomes clearer. New product developments with end-use orientation are being reconstituted from flakes, shavings, veneers, fibres and other residues and by-products. These new composition products are in panels or glued into beams for uses in construction, materials handling, furniture and other uses.

Consumption of panels and engineered wood products is at record levels in North America and Europe but with capacity being installed faster than demand, the result was weak prices in Europe and volatility in North America. MDF is a product which is replacing solid wood in furniture and mouldings, and which is constantly finding new applications. However like other panels, MDF capacity is high and prices are weak. Well established in North America, OSB does not have the same construction applications in Europe, although different applications and new market niches are being developed.

TABLE 1.1.1

Apparent consumption of sawnwood, wood-based panels and paper and paperboard in the ECE Region, 1996-1999

						Change 1998 to 1999	
	Thousand	*1996*	*1997*	*1998*	*1999*	*Volume*	*%*
EUROPE							
Sawnwood [b]	m^3	90,891	97,339	101,872	105,026	3,154	3.1
Wood-based panels [c]	m^3	43,167	46,462	51,437	52,194	757	1.5
Paper and paperboard	m.t.	73,463	79,211	82,470	85,322	2,852	3.5
Total	m3 EQ [a]	463,533	498,607	524,868	540,795	15,926	3.0
RUSSIAN FEDERATION							
Sawnwood [b]	m3	18,412	16,753	14,731	12,558	-2,173	-14.8
Wood-based panels [c]	m3	2,228	3,134	2,560	2,866	306	11.9
Paper and paperboard	m.t.	2,212	2,353	2,128	2,751	623	29.3
Total	m3 EQ [a]	40,522	39,796	34,880	34,003	-876	-2.5
NORTH AMERICA							
Sawnwood [b]	m3	161,892	167,860	171,634	181,416	9,782	5.7
Wood-based panels [c]	m3	48,019	48,628	52,794	55,615	2,821	5.3
Paper and paperboard	m.t.	91,608	86,306	98,332	103,789	5,457	5.5
		N/A	N/A	N/A	N/A		
Total	m3 EQ [a]	646,409	638,957	692,431	731,095	38,664	5.6

[a] Equivalent of wood in the rough

[b] Excluding sleepers

[c] Excluding veneer sheets

Source: ECE/FAO TIMBER database, 2000.

1.2 Trends in forest products markets

Due to socio-economic changes, for example demographic changes, a number of structural changes are occurring in forest products markets in the ECE region. Markets are continuing to become more global, despite rising transportation costs, and wood raw materials are being shipped considerable distances between continents.

With increasing competition a stronger market orientation is becoming evident across the ECE region as primary forest product producers seek to diversify from commodity markets and meet market requirements. The result is sales offices in key export country destinations or, conversely, foreign investment in timber-rich areas. An example of the former would be Swedish sales offices in Japan and examples of the latter would be Malaysian investment in forests and sawmills in Russia, or Japanese sawmills and panel plants in Europe and North America.

Part of the market orientation is producing new products from wood to meet more exigent specifications or to improve on current uses of wood. An example is the substitution of wood I-beams for solid-wood joists and rafters. Combination of solid wood and composite products into engineered wood products enables serving new functions, as well as improvement on existing applications.

Another trend is the increased communication between the forest and forest industries sector and the public. Certification of sustainable forest management is established and thus far has been most beneficial in the ECE region as a tool to communicate companies' and governments' assurance that forest products are being sustainably produced. While availability of certified forest products is increasing, and the potential supply is increasing faster, in general in the region consumers are not demanding CFPs.

Industry is restructuring in line with global markets and marketing and the number of players is dropping as production capacity is rationalised, especially in the pulp and paper sector. Large, multi-national companies can achieve greater efficiencies in marketing, including distribution channels. Fewer players have an impact on prices, both for raw materials and final products.

Inventory carrying costs are continually minimised through just-in time ordering. Sometimes price volatility occurs when stocks cannot buffer price rises.

More extensive and timely market information is available, both in print and in electronic form over the Internet. Electronic communication has accelerated price comparisons and ordering. Electronic marketplaces are no longer the future, but are well established.

The promotion of wood as a natural, renewable, environmentally-sound choice is accelerating in countries, corporations and internationally. Nevertheless wood products and paper-based packaging remain under threat from substitution by plastics, steel, aluminium and concrete. Companies are finding that their environmental policies are an important competitive advantage in certain marketplaces.

The emphasis on new construction sometimes overshadows the important demand for wood and wood products for the repair and remodelling markets. Whether through professionals or through DIY stores, the values of wood materials going into renovation and improvement are often equivalent to the proportion for construction.

1.3 Timber Committee forecasts

The Timber Committee forecast production and trade of forest products in 1999 and 2000 at the September 1999 session. In retrospect the projected apparent consumption for 1999 was low for Europe and North America and the predictions for 2000 have been surpassed.[2] In early 2000 the trends were much stronger than envisaged and the annual totals will depend on continued strength in economies – an uncertainty in mid 2000. The Committee predicted the direction of the decrease in Russian Federation consumption of sawnwood, but not the magnitude. However the Committee foresaw a rise in sawnwood exports and a further increase was forecast for 2000. An anticipated growth in 1999 in panels' apparent consumption was correct and another climb was foreseen for 2000.

---

[2] Direct comparison between forecasts and the actual statistics is difficult because of changes in definitions.

Chapter 2

Economic Factors Affecting Forest Products Markets

Highlights

- During 1999, fears that the world economy would slide into recession receded, and in the second half of the year, business confidence, real activity and expectations for 2000 all improved steadily.
- At end 1999, the western European economies were growing at an annual rate of about 3.5%, with similar growth expected for 2000.
- Western European construction rose by 3% in 1999, and further growth, but at a lower rate, is expected for 2000 and 2001.
- The United States economy continued to expand, for the 108th consecutive month, the longest upswing on record. For the third year in succession, growth was over 4%.
- The United States housing boom continued in 1999 and early 2000. However there are signs that the end of the boom may be in sight as starts fell, quite significantly, in March and May 2000.
- Eastern Europe grew slower than forecast, by 1.4% and the Baltic countries went into recession.
- The Russian economy grew by more than 3%. Construction output rose by 5.4%, the first rise after three successive falls.
- The Japanese economy fell in both the third and fourth quarters of 1999, despite fiscal measures to stimulate performance.
- Japanese housing starts stagnated in 1999 at a relatively low level.

2.1 General economic developments

The analysis below is taken from the *Economic Survey of Europe*, number 1 of 2000, prepared by the Economic Analysis Division of the secretariat of the Economic Commission for Europe. The full text of the *Survey* is available from the ECE website.

2.1.1 Global overview

The negative effects of the financial crises in Asia in 1997 and Russia in 1998 were still depressing real economic activity in much of the ECE region, including international trade, until the early months of 1999. However, during 1999, fears that the world economy might slide into recession receded as stability was restored to the international financial markets, helped to a large degree by the temporary loosening of monetary policy in the United States, harsh adjustment measures in Asia and other developing countries, and by the continued strong growth of the United States economy.

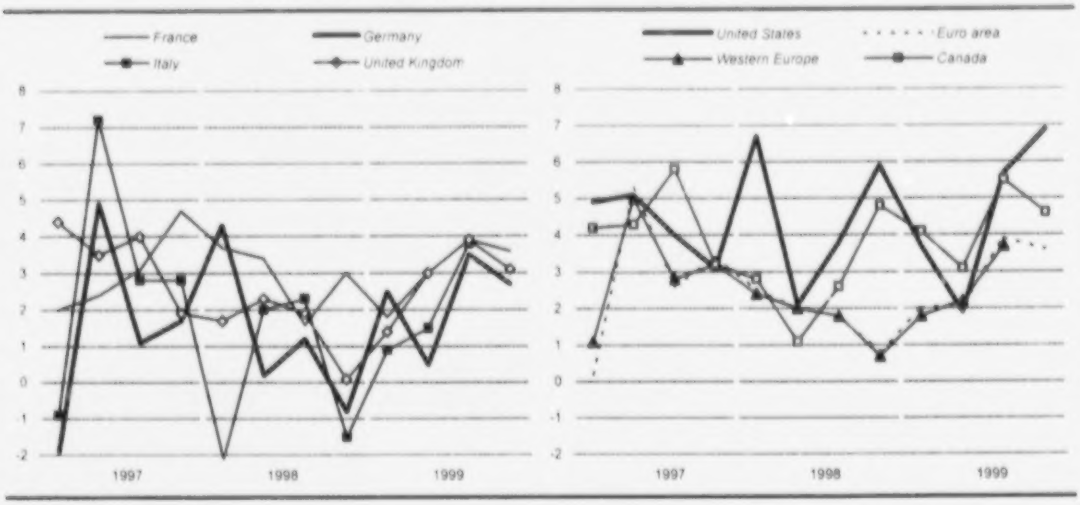
By the middle of 1999 the situation in most parts of the world economy had stabilized and in the second half of the year business confidence, real activity and expectations for 2000 were all improving steadily. In western Europe economic growth received a strong boost from exports to the rest of the world, not least from the strong import demand of the United States economy, and, by the third quarter, GDP was rising at its highest annual rate since before the Asian crisis. In the transition economies of central Europe the worst effects of the Russian crisis were receding in the second half of 1999 and they were starting to benefit from the revival of domestic demand in western Europe. In Russia there was a significant recovery in output for the first time in a decade, and, although the extent to which the underlying factors provide a basis for sustainable growth over a longer period is uncertain, this has nevertheless had a positive effect on most other members of the CIS.

These widespread improvements in the economic situation are not reflected in the *annual* figures for performance in 1999, which for the most part show a marked deterioration on those for 1998, but they are seen in the quarterly and monthly indicators for late 1999 and early 2000 and, above all, in the current forecasts for 2000 (graph 2.1.1). For the first time since 1990, average GDP growth in western Europe is likely to exceed 3%; for the transition economies of eastern Europe growth should return to an average of 4% or more in 2000, and the Baltic economies should emerge from recession with an average growth rate of some 3%. After a much better than expected outcome in 1999, growth is also likely to continue in Russia and the other CIS countries, although here the prospects are much more problematic and uncertain. This much improved outlook for the European economies is also set against a background of more optimistic forecasts for other parts of the world economy and, not least, for continuing growth in the United States

GRAPH 2.1.1

Quarterly changes in real GDP in western Europe and North America, 1997-1999

(Percentage change over preceding quarter, seasonally adjusted at annual rates)



Note: Data for western Europe cover 13 countries (Austria, Belgium, Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland and the United Kingdom). Data for the euro area exclude Ireland and Portugal.

Source: National statistics.

where, although a slowdown is currently forecast, GDP is still expected to increase by some 4% in 2000.

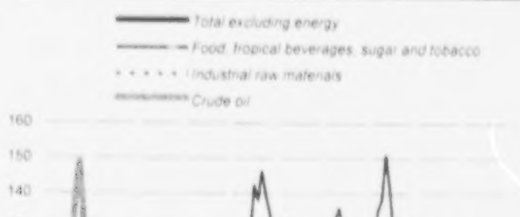
However, it is important to stress two points: first, there is always a distribution of risk surrounding any forecast and although the *Survey* believes the balance is now more favourable for growth in Europe this does not mean that the downside risks are negligible; the possibility of a crash in overvalued equity prices in the United States is a serious risk to the current outlook, and there are uncertainties over the course of oil prices and of monetary policy in the EMU. Secondly, not all the economies of the region enjoy the same prospects and there are especially large differences among the transition economies. In particular much of the region of south-east Europe is still beset by severe structural problems and the consequences of several armed conflicts which have made the process of transition to a market economy much more difficult than in central Europe. The fact is that for the past decade these countries, the poorest in Europe, have continued to fall further behind both western and central Europe rather than catch up.

In the international oil markets there was a sharp rise in the price of crude oil in 1999, which has continued in early 2000 (graph 2.1.2). This was, in general, the main source of upward pressures on the still relatively moderate rates of inflation in the industrialized countries. In early March 2000, the spot price of Brent crude was around $30 per barrel, compared with $9.9 in early February 1999. The March price was the highest level since the 1991 Gulf war. This surge reflects in the main the adherence to the supply quotas agreed by the oil exporting countries in March 1999 and intended to reverse the depressing effect on prices of excess supply and abundant stocks. The more rapid rate of economic expansion in the course of 1999, moreover, led to an increase in oil demand, which was only partly met by the available new supply. As a result, oil stocks in the industrialized countries in the final quarter of 1999 fell at their highest rate in a decade. When measured in real terms (i.e. relative to the unit value index of manufactured exports of the developed market economies), the price of oil in early 2000, however, was still some 40% below the average during 1980 to 1985, the last sustained period of high real oil prices. More recently there have been growing concerns about the potential inflationary effects of further increases in the price of oil and calls by industrialized countries for oil producers to raise output. The more rapid expansion of global economic activity has also tended to support the prices of industrial materials, which started to rise in the second half of 1999, although for the year as a whole there was still a small decline. Persistent excess supply has led to further sharp declines in the prices of agricultural commodities, notably food and tropical beverages (coffee, tea and cocoa).

GRAPH 2.1.2

World commodity prices, January 1990-February 2000

(Indices, 1990=100)



Note: Indices calculated on the basis of current dollar prices.
Source: Hamburg Institute for Economic Research (HWWA), 2000.

The millennium date change (the so-called Y2K problem) did not have any significant adverse impact on macroeconomic developments in early 2000.

In *Latin America,* real GDP stagnated in 1999, the first time in the 1990s that the region as a whole did not experience positive economic growth. Nevertheless, even this performance was still better than expected earlier in the year and it is largely accounted for by the moderate recovery in Brazil, where real GDP rose by about 0.5% compared with 1998.

In the five *Asian emerging markets* most directly affected by the financial crisis of 1997, there was an unexpectedly strong recovery from the depression of economic activity in 1999. The cyclical upturn partly reflects the global recovery in demand for electronic products and partly the impact of expansionary economic policies. Also, progress in structural reforms, such as the rehabilitation of the financial sector, and the strong yen have contributed to this performance. In the Republic of Korea, real GDP rose by 10% in 1999, more than offsetting the decline of 5.8% in 1998. Aggregate output increased by some 5% in Malaysia and Thailand and by 3% in the Philippines. In contrast, Indonesia remained mired in deep crisis. Outside these five economies, there was robust growth in Taiwan Province of China and Singapore. In China, expansionary economic policies helped to maintain economic growth at a high rate of some 7% in 1999.

In *Japan*, hopes that the economy might be on the way towards a gradual, sustained recovery have been disappointed. Real GDP fell in both the third and fourth quarters of 1999 (over the preceding quarters): technically, the economy has therefore moved back into recession. This occurred despite massively expansionary fiscal packages and, since February 1999, a zero-interest rate policy of the central bank. The strong yen restrained exports, but there was also a conspicuous weakening of private consumption and public investment in the final quarter of 1999. For the year as a whole, real GDP rose by only 0.3%. There are also mounting concerns about the rapid deterioration of the public finances: a succession of large budget deficits have led to a significant rise in the general government's gross financial liabilities, which corresponded to about 105% of GDP in 1999.

2.1.2 Market economies of western Europe

The economic prospects for western Europe now appear to be better than at any time in the last decade. In the second half of 1999 the region finally shook off the sluggishness of activity which had marked 1998 and early 1999, and by the third quarter (and probably the fourth as well) GDP was growing at an annual rate of around 3.5% (table 2.1.1). Exports to the rest of the world had helped the process of recovery earlier in the year, but given the high levels of interdependence of the European economies this quickly had multiplier effects on demand throughout most of the EU. Business and consumer confidence strengthened considerably. Monetary policy has been expansionary and relatively low levels of interest rates have helped to boost consumer expenditure and investment. Rising levels of employment and gains in real income, boosted in some countries by rising asset values, have also supported confidence and consumer spending. Business fixed investment was also rising through 1999, with above average increases in machinery and equipment – better prospects for sales, lower costs of financing, better profits, and perhaps some stimulus from the need to prepare for the Y2K problem, were the main influences behind this improvement.

The improvement in output led to rising levels of employment during the year, by some 1.5% on average between the fourth quarters of 1998 and 1999. The level of unemployment in western Europe has also fallen, from 9.1% at the end of 1998 to 8.4% in the last quarter of 1999 (9.6% in the euro area). Despite a wide range of schemes to reduce joblessness among particular groups, the problem of youth unemployment remains acute (16.8% in the EU at the end of 1999) and the long-term unemployed, nearly one half of total unemployment in the EU, have yet to benefit significantly from the cyclical upturn in activity.

Despite the rise in import prices in 1999, due to higher oil prices and the weakness of the euro, the impact on west European rates of inflation has been quite modest. Intense competition has forced some absorption of higher producer prices in lower margins, but there have also been offsetting price falls for other products and in services where liberalization has been important. Labour cost pressures also remain mild, and although the annual

TABLE 2.1.1

Annual changes in real GDP in western Europe and North America, 1997-2000

(Percentage change over previous year)

	1997	*1998*	*1999*[a]	*2000*[b]
Western Europe	2.8	2.7	2.0	3.2
4 major countries	2.1	2.3	1.9	2.9
France	2.0	3.4	2.7	3.5
Germany	1.5	2.2	1.5	2.8
Italy	1.8	1.5	1.4	2.5
United Kingdom	3.5	2.2	2.0	3.0
17 smaller countries	4.1	3.4	2.4	3.5
Austria	1.2	2.9	2.2	2.8
Belgium	3.5	2.7	2.3	3.2
Cyprus	2.5	5.0	4.5	4.1
Denmark	3.1	2.7	1.3	2.0
Finland	6.3	5.0	3.5	4.5
Greece	3.4	3.7	3.3	3.7
Iceland	5.3	5.1	6.0	2.9
Ireland	10.7	8.9	8.3	7.5
Israel	2.9	2.2	2.0	3.5
Luxembourg	7.3	5.0	5.1	4.3
Malta	4.8	3.1	4.8	4.8
Netherlands	3.8	3.7	3.5	3.5
Norway	4.3	2.1	0.8	2.7
Portugal	3.5	3.5	3.1	3.3
Spain	3.8	4.0	3.7	3.7
Sweden	2.0	3.0	3.8	4.0
Switzerland	1.7	2.1	1.7	2.5
Turkey	7.5	2.8	-2.3	4.6
North America	4.5	4.2	4.1	4.0
Canada	4.0	3.1	4.2	3.9
United States	4.5	4.3	4.1	4.0
Total above	3.6	3.4	3.1	3.6
Japan	1.6	-2.5	0.3	0.7
Total above, *including Japan*	3.3	2.5	2.6	3.1
Memorandum items:				
European Union	2.6	2.7	2.3	3.1
Euro area	2.3	2.8	2.3	3.1

Note: All aggregates exclude Israel. Growth rates of regional aggregates have been calculated as weighted averages of growth rates in individual countries. Weights were derived from 1991 GDP data converted from national currency units into dollars using purchasing power parities.

a Preliminary estimates or forecasts.

b Forecasts.

Source: OECD national accounts; national statistics and national economic reports, 2000.

rate of inflation in the euro area in February 2000 was 2%, most forecasters expect the impulse from higher import prices to die away during the coming months.

Against this general improvement in the economic indicators economic growth in western Europe in 2000 is expected to average slightly more than 3% and, with most of the revisions tending to raise rather than lower the national forecasts, the outcome could perhaps be closer to 3.5%.

The acceleration in economic activity was broadly based across countries, but there was notably a marked simultaneous strengthening of economic activity in the four major economies. Within the *euro area*, the degree of cyclical divergence between the smaller member countries and the larger ones diminished somewhat in the course of 1999

Viewed from the supply-side, the current cyclical upturn reflects the reversal of the weakening of industrial activity that occurred in the second half of 1998. In fact, output had fallen sharply in the final quarter of 1998, largely reflecting the direct and indirect effects of the crises in Asia and other emerging markets on west European exports. But activity started to recover after the first quarter of 1999, with export demand stabilizing and, in most countries, strong growth of consumption and fixed investment, and the rundown in stocks coming to an end. For the year as a whole, industrial output rose, but only by 1% (against 3.3% in 1998) and manufacturing output increased by 1.3%. The decline in manufacturing capacity utilization rates since late 1998 started to be reversed in the final months of 1999 when, in fact, they were close to their long-term (1989 to 1998) average.

Viewed from the demand side, the recovery in 1999 was largely export-led. But domestic demand proved, in general, to be quite resilient to the deteriorating economic environment in the second half of 1998. Exports were supported by the improved price competitiveness deriving from the strong dollar and the revival of domestic demand in emerging markets. Exports also benefited from the stronger than expected economic growth in the United States and Canada. The strengthening of demand from outside the European region then fed through to domestic demand which, in turn, stimulated intra-European trade. This kind of virtuous circle is well known from previous upswings. Although increased exports and strengthening domestic demand led to rising imports, changes in real net exports supported economic activity after the first quarter of 1999. For nearly two years net exports, on average, had been a drag on domestic activity. In addition, domestic demand continued to be supported by the expansionary stance of monetary policy and the increases in income due to rising levels of output and employment. Low interest rates stimulated the demand for interest-sensitive expenditure items, such as consumer durables and investment goods, including housing.

For 1999 as a whole, private consumption was the mainstay of economic growth in western Europe. Household expenditures rose on average by 2.5% compared with 1998, but consumer spending was more buoyant in a number of smaller economies. The general background to this was a marked rise in consumer confidence to its highest level in the 1990s. Confidence was bolstered by the improving situation in the labour markets and, partly related to this, to gains in real income in a context of continued moderate inflation. Household spending was also stimulated by rising net wealth due to increases in the prices of shares and, in some countries, real estate. This wealth effect, together with favourable financing conditions, led many households to finance purchases of “big ticket” items by means of borrowing. In many countries falling savings ratios supported private consumption in 1999. Government consumption expenditures rose somewhat more strongly in 1999 than in 1998, a reflection of reduced pressure for fiscal consolidation.

Fixed investment strengthened in the course of 1999, although for the year as a whole the increase was only about 4¼%, down from 5.5% in 1998. There was a somewhat stronger growth of expenditure on machinery and equipment than on construction, but it is noteworthy that construction – both residential and public infrastructure – picked up in 1999, after rather sluggish growth in the two preceding years. Apart from favourable financing conditions, business investment was supported by improved sales expectations and relatively high and rising capacity utilization rates, all factors which have tended to increase profitability. To some extent business investment in machinery was also stimulated by the need to ensure Y2K compliance of electronic data processing (EDP) equipment. Changes in inventories had little impact on economic activity in 1999.

In the euro area, economic conditions generally remained buoyant in most of the smaller economies (Finland, Ireland, Luxembourg, Netherlands, Portugal, Spain) with strong domestic demand offsetting the temporary weakness of exports. These countries had rates of economic growth significantly above the European average and it is evident that they are at a more advanced stage of the business cycle than France, Germany and Italy, with attendant risks of overheating. But the underlying strength of the business cycle also continued to differ among the three larger economies, with a stronger upturn in France compared with the other two countries. This reflects, to a large degree, the asymmetric trade effects of the Asian crisis, which hit France much less than Germany and Italy. To some extent, the current boom in Ireland, Portugal and Spain also reflects the considerable monetary stimulus that these economies received in the run-up to EMU in 1998, when there was a substantial reduction in interest rates This was accentuated by the further lowering of interest rates by the European Central Bank in April 1999, although it was hardly appropriate for these countries in view of their cyclical position. (The same holds mutatis mutandis for Finland and Luxembourg.)

Outside the euro area, the six-year expansion in the United Kingdom ended in the final quarter of 1998, when real GDP stagnated compared with the preceding period. But fears that the economy might move into recession did not materialize; instead, economic activity gathered considerable momentum in the course of 1999, provoking a renewed tightening of monetary policy in the second half of 1999, which continued in early 2000. Among the remaining economies, rapid growth in Greece, Iceland and Sweden contrasts with the more sluggish performance in Denmark, Norway and Switzerland. In Greece, the government aims to join EMU at the beginning of 2001, a formal application being submitted in early March 2000. Stringent fiscal consolidation led to a fall in the general government deficit to some 1.5% of GDP in 1999, down from 7.4% in 1996. Among the other Mediterranean countries, there was continued strong growth in Cyprus and Malta. In contrast, real GDP fell in Turkey in 1999, largely a consequence of the earthquake in the Marmara region in August. In Israel, economic activity picked up in the course of 1999, partly reflecting the improved export performance associated with the more favourable global economic developments

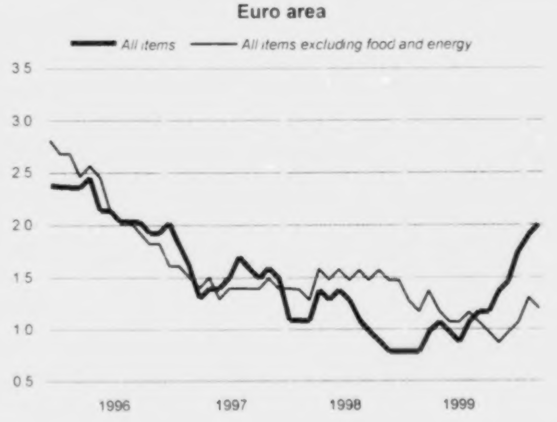
Consumer price inflation in the *euro area* started to edge upwards in the second half of 1999 (graph 2.1.3). This rise, however, is not reflected in the average annual inflation rate which was unchanged from 1998. In February 2000, the annual inflation rate was 2%, which is the upper limit of the (asymmetric) inflation target of the European Central Bank. In the main, the upturn since the second half of 1999 reflected the pass-through of the sharp rise in oil prices and the general upward pressure on import prices due to the depreciation of the euro. Labour cost pressures, however, remained relatively moderate. But the rise in non-energy commodity prices has also added to the pressure for higher prices. At the producer level, these pressures were reflected in a rapid rise of intermediate goods prices, which in January 2000 were 7.4% higher than in the same month of 1998. In contrast, final goods prices rose by less than 1% over the same period, which points to the limited scope for raising prices in the face of intense competitive pressures. These are also reflected in the still modest rate of core inflation: the consumer price index excluding food and energy was only 1.2% higher in February 2000 than a year earlier. The downward pressure of increased competition on prices was especially notable in the services sector where liberalization has led to large price cuts for telecommunication products. Similarly, the liberalization of the electricity market in several countries has lowered the price of electricity, a development which has partly offset the impact of higher oil prices on the overall inflation rate. There continue to be sizeable differences between the countries of the euro area, a reflection of both cyclical and structural factors: in February 2000, inflation ranged from 1.5% in France and the Netherlands to 4.6% in Ireland.

Outside the euro area, inflationary pressures have also remained generally moderate. In the United Kingdom, the strong pound and intense competition in the manufacturing and retail sectors led to a fall in goods prices in the second half of 1999. This contrasts with continued large increases in the prices of services reflecting the buoyancy of demand as well as cost pressures stemming mainly from rising labour costs.

Monetary conditions in the western market economies changed in the course of 1999 and in early 2000 towards a tightening of monetary policy. In the euro area, increases in short-term interest rates have partly offset the expansionary effects of the depreciation of the exchange rate. In contrast, in the United Kingdom and the United States, higher interest rates have accentuated the restraining effects on demand of their strong currencies.

GRAPH 2.1.3

The Harmonized Index of Consumer Prices of the euro area, January 1996-February 2000
(Percentage change over same month of preceding year)



Note: Tobacco and alcohol are also excluded from the "All items excluding food and energy" index.

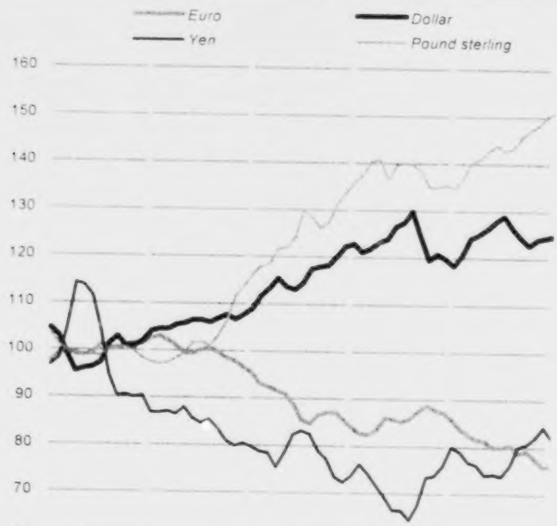
Source: Eurostat, 2000.

In the *euro area*, the stance of monetary policy began to be tightened in November 1999. The main refinancing rate was increased by 0.5 percentage point, to 3%, thus fully reversing the reduction in April. The European Central Bank argued that the move was designed to contain the medium-term risks to price stability against a backdrop of strengthening economic growth, rising oil prices, a rapid expansion of credit to the private sector and a growth of money supply significantly above the reference value of 4.5%. This policy was continued in early February and in mid-March 2000, when the main refinancing rate was raised successively by a quarter of a percentage point to 3.5%. In addition to the factors already noted, this decision also reflected concerns about the sizeable depreciation of the euro and its potential inflationary impact on domestic inflation via rising import prices, but it may be surmised that concerns about investors' confidence in euro-denominated financial assets also played a role (graph 2.1.4).

GRAPH 2.1.4

Real effective exchange rates, January 1995-January 2000

(Indices, 1995=100)



Note: Based on relative unit labour costs. The real effective exchange rate for the euro before January 1999 is based on the so-called "synthetic euro", i.e. a trade-weighted average of the bilateral exchange rates of the participating EMU countries against the dollar using their national conversion rates vis-à-vis the euro. For more information see the source.

Source: IMF, *International Financial Statistics* (Washington, D.C.), March 2000.

In a similar vein, in the *United Kingdom*, strong growth in domestic demand and increasing pressures in the labour market and on productive capacity led to fears that inflation would rise above the 2.5% inflation target. Consequently, there was a progressive tightening of monetary policy between September 1999 and early February 2000, the repo-rate being increased in stages by a full percentage point to 6%.

2.1.3 North American developments

In the *United States*, the economic expansion entered its 108th month in February 2000 – starting from a cyclical through in March 1991, this has been the longest upswing on record. Economic growth accelerated markedly in the second half of 1999, reflecting in the main the combined impact of faster rates of inventory accumulation and export growth in the presence of continued robust growth of private consumption and business fixed investment. The result was that real GDP rose by 4.1% in 1999, the third consecutive year in which annual growth exceeded 4%.

Against a background of improved foreign demand, manufacturing activity strengthened in the second half of 1999, and for the year as a whole increased by 4¼%, down from 4.25% in 1998. Within the average, there was a much stronger growth of durable than non-durable goods. But there still appears to be relatively large margins of slack in the manufacturing sector. Capacity utilization rates edged upwards only slightly in the course of the year, reflecting the continuing strong growth of capacity which in December 1999 was estimated to be some 4.5% larger than a year earlier

Private consumption in 1999 continued to be supported by further gains in real disposable incomes, reflecting in turn a combination of increases in real hourly earnings and employment. Against this backdrop, consumer confidence remained strong and in January 2000 reached its highest level in the 32-year history of this index. In addition, spending was stimulated by favourable lending terms and by further increases in wealth due to rising share prices and house prices. This is also mirrored in a further decline of the household savings ratio which was only 1.9% of disposable incomes in the final quarter of 1999, down from 3.5% a year earlier. The debt burden (the ratio of total debt service payments to family income) has risen above its previous record level in 1989.

Government spending also contributed to higher output levels in 1999. Fixed investment in equipment, notably information and communications technology and software remained one of the main driving forces of economic growth. Residential investment slowed down in the second half of the year under the impact of rising mortgage rates while outlays on business structures fell in each quarter of 1999.

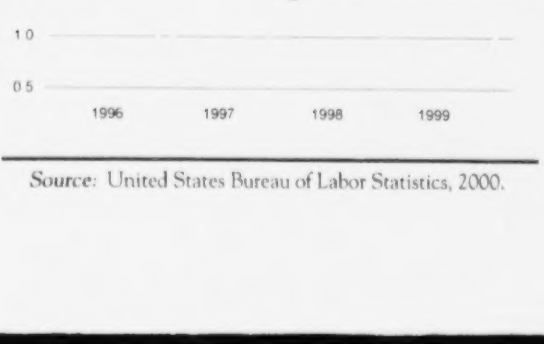
Export growth strengthened in the second half of the year, the restraining effects of the strong dollar being offset by the revival of demand in western Europe and other regions of the world economy. On the other hand, buoyant domestic demand led to continued rapid growth of imports. Changes in real net exports subtracted 1.3 percentage points from annual economic growth in 1999, the same as in 1998. The merchandise trade deficit rose to $347 billion, up from $247 billion in 1998. Combined with another decline in the surplus in services and the deficit in transfers, this translated into the current account deficit of some $339 billion in 1999, equivalent to about 3.7% of GDP and 1.2 percentage points more than in 1998.

A striking feature of the United States economy is the moderate inflation in the face of very tight labour markets. Core inflation remained broadly stable at 2% during 1999, and continued to do so in the first two months of 2000 (graph 2.1.5). This compares with an overall inflation rate rise of 3.2% in February 2000, the difference being solely due to the impact of the sharp rise in oil prices. Labour cost pressures remained moderate in the face of strong productivity growth. Hourly compensation in the non-farm business sector in the final quarter of 1999 was 4.3% higher than the same period of 1998, but unit labour costs were only 0.7% higher. This average outcome, however, is strongly influenced by favourable developments in the durable goods sector of manufacturing.

GRAPH 2.1.5

Consumer price indices in the United States, January 1996-February 2000

(Percentage change over same month of preceding year)



Source: United States Bureau of Labor Statistics, 2000.

Rapid economic expansion led to further substantial gains in employment in 1999. For the year as whole it increased by 1.5%. The gains have continued in early 2000, although there was a slowdown in non-farm payrolls in February. As in previous years, most of the additional jobs were in the services sector, where employment rose by 2.8% in the 12 months to January 2000. Increased construction activity also led to some rise in employment, but on the whole the number of persons employed outside the service sectors has remained broadly stable. The decline in manufacturing employment in 1998 petered out in the course of 1999, and although there were small gains in January 2000 (compared with the preceding month), mostly in construction related activities, it was still 1.2% lower than a year earlier. The rise in total employment increased the employment/population ratio to a record level of 64.8% in January 2000.

In the United States, the continued economic expansion at a rate above the trend rate of output growth and increasingly tight labour markets have raised concerns about the increasing risk of upward pressures on costs and prices. As a result, the Federal Reserve has reversed the easing of monetary policy which occurred in the second half of 1998 in response to the threats of international financial turbulence: the target for the federal funds rate was raised in three steps from 4.75% to 5.5% between June and November 1999, and in early February 2000 there was a further increase to 5.75%.

In Canada, the cyclical upturn continued strongly in the course of the year, supported by consumer demand and fixed investment. Against a background of rising employment and real income gains, household confidence strengthened markedly. Business investment was stimulated by the prospect of improved sales and by rising capacity utilization rates. Exports benefited from the strength of demand in the United States, the major trading partner, but also from the strengthening recovery in overseas markets. Exports helped to sustain activity in the manufacturing sector, while primary industries were stimulated by the rise in commodity prices in the course of 1999. In sum, real GDP rose by 4.2% in 1999, up from 3.1% in 1998. Rising prices for energy and services put upward pressure on the inflation rate, but this was partly offset by the dampening effect of a stronger exchange rate on import prices.

2.1.4 Countries with economies in transition

There are 27 member countries of the United Nations Economic Commission for Europe which, since the early 1990s, have been described as having "economies in transition"; that is, they are in the process of transforming the institutions, incentive systems and economic structures of central planning into those appropriate to a market system of decentralized decision making, largely, by private agents. This is a massive and complex task and very few of them have got anywhere near completing the process. The legacy of the command economy is still strong in many parts of the CIS, and in south-eastern Europe the process has been set back by a series of external shocks and by the effects of the various wars in the area. But in general the progress in institution building and structural change has been considerable even if it varies greatly among individual countries. Nevertheless, while some of the leading reformers in central Europe now have the capacity to handle such shocks with relative ease, many other transition economies remain highly vulnerable to external shocks, such as the Asian and Russian crises of 1997-1998 or the Kosovo conflict of 1999. Although the leading reformers are now, as a result of successful restructuring and integration with western markets, more sensitive to changes in domestic demand in western Europe – nearly three quarters of eastern Europe's merchandise trade is now with the European Union and for most of them Germany is the largest single trading partner – they succeeded in maintaining domestic demand and relatively high rates of GDP growth.

Economic growth slowed down very sharply in virtually all the transition economies at the beginning of last year and the outcomes were generally much lower than the forecasts made at the start of the year. Instead of growing by some 3%, as forecast, eastern Europe only managed 1.4%, while the Baltics plunged into a sharp recession. Only the CIS moved in the opposite direction, partly under the influence of Russia where GDP increased unexpectedly by more than 3% when most of the forecasts, official and unofficial, had been predicting another large fall in output.

This weak performance in 1999 to a large extent reflected the carry-over from the second half of 1998 of the after-effects of the general turmoil created by the Asian and Russian crises, aggravated for some economies by the Kosovo crisis last spring and by the slowdown in west European import demand. The Russian crisis had particularly severe consequences for the Baltic economies with massive cuts in their exports to Russia leading to a severe deterioration in output and employment. However, the unwinding of these various factors in the course of 1999 led to a marked improvement in central Europe in the second half of the year and a more moderate one in the Baltic states. The recovery in western Europe was particularly important for central Europe, while for the Baltic countries stronger west European import demand was not sufficient to offset the losses in the CIS markets. Economic growth in three of the leading reformers, however – Hungary, Poland and Slovenia – was least affected by the various shocks of 1998 and 1999: all three have reported rates of GDP growth for 1999 of more than 4%. (More information on Poland's economic developments may be found in special chapter 4.) Despite their dependence on the EU market for their exports, domestic demand, consumption and investment, including construction in Hungary and Slovenia, remained strong but, more generally, the performance of these countries reflects their economic "maturity" and the ability of their economic institutions to handle external shocks more easily.

The biggest surprise in 1999 was the recovery of output in Russia, GDP rising by over 3% instead of an expected fall of 2.5%. The factors behind this were the sharp rise in oil prices from the spring, which boosted profits and the government's tax revenues, a real depreciation of the exchange rate by nearly 50% since the August 1998 crisis, and a fall in real wages. The latter two factors enabled local producers to win back a significant share of their domestic market. Although GDP is expected to rise again in 2000, it is still difficult to be confident about the outlook for Russia because of the lacunae in the institutional framework and the limited progress made in microeconomic restructuring.

Nevertheless, the recovery in the Russian economy, together with higher world prices for oil and non-ferrous metals, had a favourable impact on the other members of the CIS with output continuing to fall only in Ukraine and the Republic of Moldova.

The economies of south-east Europe were obviously greatly affected by the Kosovo conflict and its aftermath for much of the year, although the direct impact on the neighbouring economies appears to have been less than feared. Reconstruction work in Kosovo itself has helped to raise industrial production in the region as did the recovery in west European import demand. But Romania remained in severe recession (GDP falling over 3%) and in Yugoslavia, with its infrastructure severely damaged by NATO bombing, GDP and industrial output are estimated to have fallen some 20% and more. There was, however, modest growth in Bulgaria and The former Yugoslav Republic of Macedonia (just over 2.5%) although in the former, industry remains in severe recession.

The setbacks to activity in the transition economies in 1999 checked the gradual improvement in employment that had taken place in the previous two years and, apart from Hungary and Slovenia as well as Russia and a few other members of the CIS, there was a general fall in the first three quarters of the year. In several countries in eastern Europe, especially Poland, the fall in employment was also due to a more intense rate of industrial restructuring. Unemployment, already high at the start of the year, reached an average 14.6% of the

TABLE 2.1.2

GDP growth rates for the ECE transition economies, 1997-2000

(Rates of change, %)

	GDP				
			1999		*2000*
	1997	*1998*	*Ex-ante forecast*	*Actual*	*official forecast*
Eastern Europe	2.1	1.8	2.9	1.4	4
Albania	-7.0	8	8	8	8
Bosnia and Herzegovina [a]	..	..	..	..	12
Bulgaria	-7.0	3.5	3.7	2.6	4
Croatia	6.8	2.5	1.5-2	-0.3	2.6
Czech Republic	-1.0	-2.2	-0.8	-0.2	1.5
Hungary	4.6	4.9	5	4.5	5
Poland	6.9	4.8	4.5	4.1	5.2
Romania	-6.1	-5.4	-2	-3.2	1.3
Slovakia	6.5	4.4	3	1.9	2
Slovenia	4.6	3.9	4	4.9	3¼
The former Yugoslav Republic of Macedonia	1.4	2.9	6	2.7	6
Yugoslavia	7.4	2.5	7	-19.3	14
Baltic states	8.4	4.5	4.5	-1.7	3
Estonia	10.6	4.0	4	-1.4	3.8-4.0
Latvia	8.6	3.9	4	0.1	3.5
Lithuania	7.3	5.1	5	-3.0	2
CIS	1.1	-3.0	-1.1	2.9	2¼
Armenia	3.3	7.2	4	3.0	5.6
Azerbaijan	5.8	10.0	9	7.4	8
Belarus	11.4	8.4	4-6	3.4	2-3
Georgia	11.3	2.9	8	3.0	4.2-4.8
Kazakhstan	1.7	-1.9	1.5	1.7	3
Kyrgyzstan	9.9	2.1	2.8	3.6	4-5
Republic of Moldova [b]	1.6	-8.6	-3	-4.4	2
Russian Federation ...	0.9	-4.9	-2.5	3.2	1.5-2.5
Tajikistan	1.7	5.3	..	3.7	..
Turkmenistan	-11.4	5.0	..	16.0	12
Ukraine	-3.0	-1.7	-1	-0.4	1
Uzbekistan	5.2	4.4	4.4	4.4	5
Total above	1.6	-1.1	0.7	2¼	3
Memorandum items:					
CETE-5	4.5	3.2	3.6	3.1	4.1
SETE-7	-3.4	-1.6	1.3	-2.9	3.6
Former GDR	1.7	2.0	..	..	..

Note: Aggregates are UN/ECE secretariat calculations, using PPPs obtained from the 1996 European Comparison Programme. Output measures are in real terms (constant prices). Forecasts are those of national conjunctural institutes or government forecasts associated with the central budget formulation. Industrial output refers to gross output, not the contribution of industry to GDP. Aggregates shown are: *Eastern Europe* (the 12 countries below that line), with sub-aggregates *CETE-5* (central European transition economies: Czech Republic, Hungary, Poland, Slovakia, Slovenia) and *SETE-7* (south-east European transition economies: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Romania, The former Yugoslav Republic of Macedonia and Yugoslavia); *Baltic states* (Estonia, Latvia, Lithuania); and *CIS* (12 member countries of the Commonwealth of Independent States).

[a] Data reported by the Statistical Office of the Federation; these exclude the area of Republika Srpska.

[b] *Excluding Transdniestria.*

Source: National statistics; CIS Statistical Committee; direct communications from national statistical offices to UN/ECE secretariat, 2000.

roughly 7.6 million people. In the Baltic states unemployment averaged just over 9% at the end of 1999, compared with 7.3% a year earlier. In Russia the unemployment rate was just over 12% at the end of the year, about a point lower than at the end of 1998.

The other setback last year was a general check to the decline in rates of inflation which had been underway for several years and had gathered momentum in 1998. The factors behind this – and the extent of the reversal – vary between countries, but the most important single reason was the external shock of the rise in commodity prices and the appreciation of the dollar against most currencies. Nevertheless, given the weak state of the labour market in most countries, and the generally prudent stance of macroeconomic policies, this upturn in prices seems likely to be no more than a temporary setback to the process of lowering inflation rates.

With a recovery of output underway since the second half of last year and with the prospect of a relatively strong recovery in western Europe, growth in all the transition economies in 2000 is expected to average 3%, with GDP in eastern Europe rising 4%. Hungary and Poland should again have the highest rates of expansion, of 5% or more, and depending on the rate of growth in western Europe these forecasts could be raised. As mentioned already, the Russian economy remains fragile and vulnerable to any external shock such as a sharp drop in the price of oil. Nevertheless, the government is expecting growth of up to 2% and some officials are forecasting more than that. All the other CIS countries expect a return to, or an acceleration of, growth in 2000, although some of these expectations are highly contingent (for example, on the avoidance of a debt crisis in Ukraine and on a major policy adjustment in the Republic of Moldova).

It was mentioned above that only a small group of former command economies are approaching the state of "normal" market economies. One particular subset of transition economies that has lagged far behind in the process are the (seven) economies of south-east Europe. Although these are not the only economies making slow progress, attention has been focused on them in the aftermath of the Kosovo conflict and by the subsequent efforts of the international community to draw up proposals for the economic regeneration of the region and, it is hoped, thereby strengthen the prospects for peace and general stability in the area.

Although, as noted earlier, the direct economic impact of the Kosovo conflict on south-east Europe was less than feared earlier in 1999, the damage was still significant and the economies of south-east Europe moved from modest GDP growth in 1998 (1.3%) into recession (about -3%). The improvement forecast for 2000 is largely a recovery from this recession rather than the first signs of sustained economic growth. The macroeconomic situation in most of these countries is still relatively fragile. In general the main success has been in reducing inflation, in several cases to very low rates. Current account deficits have been large and persistent, with a consequent build-up of foreign debt. Unemployment rates average nearly 17%, much higher than in central Europe. In conjunction with widespread job insecurity and discontent with living standards, this makes it difficult to implement reforms that might worsen the social situation still further in the short run. Domestic investment remains weak and foreign investment is not attracted to the region in any significant quantity.

2.1.5 Short-term outlook

Forecasts of *world* economic growth in 2000 have been revised upward after a better than expected performance in 1999. World output is estimated to have increased by 3% in 1999 about ¾ of a percentage point more than expected in the spring of 1999. Current forecasts are for an annual increase in world GDP by 3.5% in 2000 (compared with 1999). The strengthening of global economic activity in 1999 was accompanied by an upturn in world trade which had slowed down markedly during 1998. The volume of merchandise trade is estimated to have increased by 5% in 1999, the same as in 1998, and current forecasts are for an acceleration to 7% in 2000.

These optimistic short-term forecasts for the global economy, however, are conditional on a number of important assumptions, notably that there will be no financial crisis in the major emerging market economies, that the rise in oil prices will peter out and possibly be partly reversed in 2000, and that the United States economy will achieve a "soft landing".

Against a background of improving economic conditions in other regions of the world economy, the short-run economic outlook for *western Europe and North America* is now quite favourable. In western Europe, the cyclical recovery is expected to gain further momentum in the course of 2000, with real GDP currently forecast to increase by slightly more than 3% in 2000. This would be the largest increase since 1990, when there was a growth rate of 3.4%. In fact, in the absence of the downside risks discussed below and a somewhat stronger rate of growth than currently expected in Germany and Italy, the outcome could be even better, possibly closer to 3.5%. Performance in the euro and non-euro areas of western Europe is expected to be similar.

In *western Europe*, the main factor behind the strengthening recovery is likely to be the more rapid expansion of exports. Apart from rising intra-regional trade, this largely reflects the stronger demand from emerging markets and developing countries where the rate of economic expansion is also forecast to accelerate. Such a favourable export performance will contribute to the strengthening of domestic demand. Private consumption will be supported by rising real incomes, in turn the result of further gains in employment and higher real wage rates. Business investment should be stimulated by rising capacity utilization rates and improved sales prospects. Changes in stock building will also make a small contribution to higher output growth. The stronger growth of domestic demand, however, will lead to a rising demand for imports and the change in real net exports should be broadly neutral in its effect on economic growth in 2000. (In 1999 net export subtracted half a percentage point from GDP growth.) Among the four major economies, France and the United Kingdom are likely to develop the strongest cyclical momentum, but growth is also accelerating in Germany and Italy, where the business climate improved markedly in early 2000. Italy, nevertheless, is expected to continue to grow more slowly than most of the other west European countries. The rate of economic expansion will remain quite strong in the smaller west European economies.

In the *United States*, the consensus of forecasts is for the cyclical expansion to slow down from the high rates of the final two quarters of 1999. Average annual growth in 2000 could still be some 4%, which includes, however, a significant statistical carry-over effect from 1999. Broadly the same outlook is forecast for Canada. These forecasts imply a significant narrowing of the growth differential between North America and western Europe in 2000. This benign scenario could continue into 2001, especially if the cyclical upturn in the various regions of the world economy leads, via the foreign trade channel, to a mutually reinforcing process of economic growth.

In the United States, robust private consumption and business fixed investment are likely to remain the mainstays of economic growth, partly supported by continuing positive wealth effects. Exports are expected to strengthen as a result of the more favourable international economic environment. A slowdown in employment growth and less favourable financing conditions associated with the tightening of monetary policy, however, should tend to dampen household expenditures and fixed investment. Import demand should remain strong but the changes in real net exports is likely to be considerably less of a drag on domestic activity in 2000 than in the two preceding years. In view of the continuing strength of economic growth, the unemployment rate should stay close to 4%. Inflationary pressures are still expected to remain rather moderate, given the assumptions about developments in the oil markets and that increases in productivity should continue to largely offset increases in labour costs. The slowdown in the rate of expansion in the course of 2000 should bring the growth of demand somewhat closer to the lower rate of potential output growth. This gradual "soft landing" has already been forecast for the last few years, but the continuing strength of the cyclical upturn has been systematically underestimated.

There remain, however, a number of downside risks which, if not contained, could lead to less favourable or even quite bad outcomes. A major uncertainty hanging over the international economy is the future direction of oil prices and its effects on inflation and growth. In the United States, the rate of expansion may not slow down sufficiently in time to avoid overheating. Important downside risks, moreover, continue to be attached to the possibility of a sharp downward correction of the high level of United States stock prices and to the sustainability of the record United States current account deficit.

The short-term prospects for the *transition economies* at the beginning of 2000 are now considerably better than they were in the middle of last year. Both domestic conditions (notably the recovery of output and the improvement in domestic demand) and the external environment (dominated by the cyclical upturn in western Europe) are much more favourable than they were in 1999. The available official forecasts suggest that the governments in practically all the transition economies expect positive GDP growth in 2000 and in most cases an acceleration of the economic recovery. GDP in the ECE transition economies as a whole should increase on average by some 3% in 2000, which would represent a record rate of growth for the region as a whole. Growth in eastern Europe is expected to average close to 4%. In the Baltic states the expectation is for an average 3%. And in the CIS countries as a whole, GDP could increase by more than 2%. As the forecasts are, in most cases, based on draft budgets, prepared in late 1999, they may be somewhat conservative.

In any case, strong and steady economic growth can be expected to continue in Hungary, Poland and Slovenia, and these economies are likely to preserve their leading positions in the ranking of east European growth rates. The expected 2% GDP growth in Slovakia reflects the continuation of a cautious adjustment effort after the authorities abandoned an unsustainable expansionary course in late 1998. The authorities in Croatia and the Czech Republic expect positive rates of GDP growth in 2000, although these are likely to remain relatively low. An economic upturn is expected in the three Baltic states as well, but their rates of growth are unlikely to return to those prevailing before the Russian crisis.

After a generally weak performance in recent years, the governments in a number of south-east European transition economies (Albania, Bosnia and Herzegovina, Bulgaria, The former Yugoslav Republic of Macedonia and Yugoslavia) expect relatively high rates of GDP growth in 2000. But even if these forecasts materialize, in most cases they will only reflect recovery from a very low base; the return of this region to sustained and high rates of economic growth still requires major restructuring and large-scale new investment. In Romania, economic activity is likely to remain weak in 2000 (the government expects only 1.3% GDP growth).

The current recovery in Russia hinges on a fragile equilibrium which is based on the post-crisis gains in competitiveness (thanks to a large depreciation in the real exchange rate and a fall in real wages) coupled with favourable external conditions (in the first place, high oil prices). However, the economy remains highly vulnerable to a reversal in any of these conditions (for example, a fall in oil prices); hence, the short-term economic outlook for Russia still remains rather uncertain. Nevertheless, at present the Russian authorities are quite optimistic as regards the short-term economic outlook. According to the budgetary projections, GDP is expected to grow by some 1.5 to 2% in 2000, although some Russian officials have recently suggested that the rate of growth could be even higher.

Recovery in Ukraine has been underway since the third quarter of 1999 and has continued during the first months of 2000 although the uncertainties regarding the short-term outlook are probably even greater than in Russia. In Belarus, after the setback caused by the Russian crisis, the authorities have set a relatively modest growth target for 2000, which they hope to support with a new, export-oriented policy. The return of the Republic of Moldova's economy to growth will largely depend on the success of a policy adjustment initiated by the government.

In general, the authorities in most of the other CIS countries have set rather ambitious targets for 2000: GDP growth is envisaged to accelerate in all the Caucasian economies as well as in most of the central Asian CIS countries.

2.2 Construction sector developments

This section presents trends in the construction in Europe, North America and Japan, as construction is the single largest market for sawnwood and panels. It concentrates on new residential construction and repairs and maintenance, as these are the sectors which are the most intensive users of wood.

2.2.1 Overview

In two of the world's three major markets, 1999 saw strong construction activity. In the *United States*, housing starts rose further from the already high level of 1998 to a seasonally adjusted annual rate just below 1.8 million units in spring 2000. The housing boom is fuelled by rising real incomes, falling unemployment, still moderate mortgage rates, and the "wealth effect" caused by the strong rise in the stock markets. In Canada, housing starts rose all through 1999 and early 2000, to reach an annual rate of 170,000 in March. Since then, they have fallen sharply, partly because of a truckers' strike in Greater Toronto.

In *Europe* total construction in western Europe rose by 3.0% in 1999 after three years of slow or even negative growth. Further growth is expected for 2000 and 2001. Similar trends are expected for the two components of most importance for forest products, new residential construction and repairs and maintenance. Rather slower growth is recorded for the aggregate of four east European countries, but there are strong differences between countries.

Japanese housing starts however stagnated around a rate of 1.2 million units, about 25% less than in 1996. Just over 46% of these were wood frame units.

In *Russia*, construction output rose by 5.4% in 1999, the first rise after three successive falls, some of which were very steep. In general construction activities in transition economies were rather volatile, and no regional trend is visible.

2.2.2 Construction in Europe

This section is based on data kindly supplied by Euroconstruct, a consortium of research institutes specialising in the construction sector. Euroconstruct divides the construction sector into four parts: new residential construction, non-residential construction, civil engineering and residential renovation and modernization.

In most west European countries, construction (total) grew by 3 to 5%, although in Ireland and Spain, the rates were above 10% (table 2.2.1). However, it fell in Denmark (-3%), Norway (-5%) and Switzerland (-3%). In Germany it fell marginally, but this slight fall represented a significant improvement on the series of declines which had been recorded since the end of the boom associated with reunification.

Moderate growth is forecast by Euroconstruct for total construction output in 2000 (+2.6% for western Europe) and 2001 (+1.6%). In both years, German construction output is expected to grow by just over 1%. Despite this recovery in the construction sector of western Europe, growth will continue to be slower than that of GDP, so that the share of construction in the economy will continue to decline, as it has for the past decade.

The four eastern European Euroconstruct members record contrasting developments for 1999 in total construction: growth of 5 to 7% for Hungary and Poland, and a drop of nearly 7% for the Czech Republic. Slovakia expects a very steep decline, 27%. However, growth in the 5 to 10% range is expected for Hungary, Poland and Slovakia in 2000 and 2001, with marginal growth in the Czech republic.

From the point of view of forest products markets it is more relevant to focus on trends for new residential construction and for repairs and maintenance than on developments for aggregate construction.

For new residential construction, 1999 saw growth, compared to 1998, of over 10% in France (+13.6%) and a small group of mostly Iberian and Nordic countries (Portugal, Spain, Finland, Sweden, Ireland). However, there were marked drops in Austria, Denmark, Switzerland and the United Kingdom, and little change for Italy and a group of neighbouring countries in north-west Europe (Belgium, Netherlands and Germany). The 2.8% growth recorded for the group as a whole is therefore an average of very different tendencies in different areas. Likewise in transition countries, Poland and Slovakia recorded growth of more than 10%, while falls were reported by Hungary (-5%) and the Czech Republic (-14.4%, after three years of uninterrupted strong growth).

The outlook for new residential construction in 2000 also varies strongly between groups:

- Very strong growth (mostly 10% or more in 2000) in the Nordic countries and Ireland;
- Moderate growth, mostly around 2 to 3% per annum, for the other west European countries, including France (2.5%, contrasting with the double digit growth registered in 1999), Italy (2.1%) and United Kingdom (3.0%);
- Continued decline or stagnation in Austria, Denmark and Germany; and
- Double digit growth in Hungary, Poland and Slovakia, but a drop in the Czech Republic for the second successive year.

For 2001 and 2002, slower growth is forecast (considerably less than 1% for the region as a whole in

TABLE 2.2.1

Developments and outlook for the construction sector in Europe, 1998-2002

(% change over previous year)

	New residential construction					*Renovation*				
	1998	*1999*	*2000*[f]	*2001*[f]	*2002*[f]	*1998*	*1999*	*2000*[f]	*2001*[f]	*2002*[f]
Austria	-5.8	-7.2	-3.4	-1.6	-0.6	30.7	3.4	1.1	2.4	2.2
Belgium	2.2	-0.5	2.0	1.0	2.0	4.0	3.0	3.0	3.0	3.5
Denmark	8.4	-6.6	-5.0	0.0	0.0	0.5	5.7	2.0	0.0	2.0
Finland	12.0	13.0	12.0	5.0	0.0	6.0	1.0	1.0	2.0	5.0
France	4.1	13.6	2.5	-5.5	-2.9	1.8	2.5	6.0	1.5	2.5
Germany	-6.7	-0.6	-0.5	0.5	1.0	0.5	0.5	0.8	1.0	1.5
Ireland	9.0	12.8	9.7	2.8	0.1	-5.4	2.7	-4.7	3.1	3.1
Italy	-6.0	1.2	2.1	1.9	2.3	4.6	8.0	3.4	-1.4	0.9
Netherlands	-2.5	-0.3	5.3	1.3	0.8	1.5	2.2	2.2	2.8	2.6
Norway	-1.7	4.6	20.1	-0.3	-10.3	-8.5	4.0	7.0	2.0	2.2
Portugal	9.1	11.0	5.0	1.0	-5.0	8.0	8.0	4.0	5.2	5.1
Spain	7.5	12.5	7.5	1.0	0.0	6.3	6.0	6.0	6.0	6.0
Sweden	1.4	21.8	14.0	14.6	12.7	1.5	4.3	4.8	6.2	5.5
Switzerland	2.8	-1.5	1.1	2.0	1.5	6.2	-3.0	1.4	5.0	4.5
United Kingdom	-0.2	-6.2	3.0	2.6	0.5	-1.6	-3.2	5.0	5.1	0.0
Western Europe (EC-15)	-1.4	2.8	2.5	0.4	0.2	2.1	2.3	3.1	1.8	1.9
Czech Republic	8.9	-14.4	-2.4	0.6	-0.8	0.5	-3.4	-0.9	5.8	9.3
Hungary	-15.0	-5.0	12.0	12.0	12.0	10.0	10.0	10.0	10.0	10.0
Poland	13.3	12.8	10.0	12.0	15.0	0.5	2.5	0.0	1.5	3.5
Slovak Republic	11.1	11.5	19.3	27.0	21.5	10.3	15.0	17.0	25.0	23.0
Central Eastern Europe (EC-4)	3.0	3.9	9.7	11.9	13.3	2.0	3.4	1.9	3.8	5.6
Euroconstruct Europe (EC-19)	-1.3	2.8	2.6	0.6	0.5	2.1	2.3	3.1	1.9	2.0

f = Euroconstruct forecast.

EC = Euroconstruct.

Source: Euroconstruct, 2000.

both years), with only Sweden, Hungary, Poland and Slovakia expecting strong growth, and many forecasting drops. Germany however forecasts slow growth (1% or less) for both years.

For many years, the rate of growth for residential renovation and modernization, has been higher than that for residential construction, but for the Euroconstruct western Europe region in 1999, growth was slower for renovation (2.3%) than for new residential construction (2.8%). Growth was strong in Italy, Portugal and Spain, but this was counteracted by sluggish growth elsewhere, notably Germany (0.5%) and falls of over 3% in Switzerland and the United Kingdom. There was double digit expansion in Hungary and Slovakia, but a fall in the Czech Republic.

The outlook is for a recovery in residential renovation and maintenance in 2000, with regional growth over 3% (slightly higher than for new residential investment), followed by growth around 2% in 2001 and 2002. Most countries are expected to show similar growth rates over the period, with faster than average growth in Iberia, Ireland, Hungary and Slovakia. The rate of growth in Germany will be between 0.8% and 1.5% in the three years, while France should see 6% growth in 2000, followed by rates around 2% in the next two years.

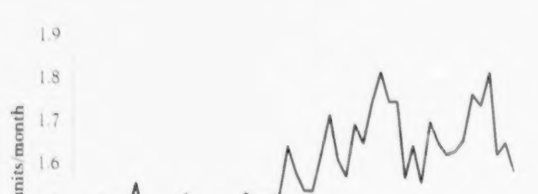
2.2.3 Construction in North America

The longest ever housing boom in the United States continued for another year in 1999. The United States housing starts, from their low point in 1991 of about 1 million, have risen strongly to reach an annual rate in February 2000 of 1.8 million units (graph 2.2.1). The figure for the whole year 1999 was 1,665,000 units, the highest total since 1986. Furthermore, 1,333,000 of these (80%) were single family units, the most intensive users of wood, the highest figure since 1978. Among the reasons cited for the long boom, which has in fact in recent years been the most important influence on world forest products markets, are:

- The strong expansion of the economy as a whole, which has raised incomes, and consumer confidence;
- Reasonably low interest rates, in absolute terms (although, they are not negligible in real terms, given the very low rates of inflation);
- The rise in share prices, which has created a "wealth effect" i.e. that even if the gains in share prices have not been realized, share owners feel richer and are thus more willing to invest in a house;
- Low unemployment; and
- Easy availability of land, materials, and a strong, efficient, construction sector.

GRAPH 2.2.1

Housing starts in United States, 1996-2000
(Seasonally adjusted annual rate)



Source: United States Census Bureau, 2000.

In recent months, United States interest rates have risen several times: in June 2000, the average rate on a 30-year fixed rate mortgage was 8.5%, up from 7.15% in May 1999. As mentioned above, the Federal Reserve is trying to prevent overheating of the economy and encourage a "soft landing". Furthermore, many high-tech stocks saw their prices fall dramatically in May 2000, which had an effect on confidence. Both these factors seem to be having an effect on the housing market, which fell quite sharply in March and again in May (after a minor recovery in April). In May 2000, the United States housing starts were at a rate of 1.59 million units, the lowest level since June 1999. The 3.9% drop in May was sharper than expected by analysts. Professional associations in the housing area expect housing starts and home sales to drop in the second half of 2000, but note that this is a fall from historically high levels, and that activity is still rather strong. New building permits, a leading indicator for the housing market also fell in May 2000, by 4.3%, faster than expected.

The figures for May 2000 also show differences between regions and types of housing: starts fell in the West and Midwest, but rose in the North-east and South. Single family housing fell by 5.4%, while other starts (multi-family, apartments, condominiums) actually rose by 2.1%.

It remains to be seen whether these events mark a definite slowdown in the housing market, and, if so, how sharp and long the fall will be. (Last year's *Review* noted a similar fall in spring 1999, which was reversed within a few months). However, the signs are that the end of the long-term boom in United States housing is in sight. (Additional information on the United States housing situation may be found in chapter 11 on engineered wood products.)

In *Canada*, housing starts rose steadily from mid 1998 to February 2000. In 1999, nearly 150,000 houses were started, 9.1% more than in 1998. However, as in the United States, a downward trend became evident from March 2000. Between February and May 2000, Canadian housing starts fell from a rate of 170,000 units to 142,000, a fall of over 15% in three months. However, there may be special factors: a strike by concrete truck drivers in the Greater Toronto area significantly slowed housing starts in Ontario (the Province with the most construction activity), and some analysts expect activity to recover in June.

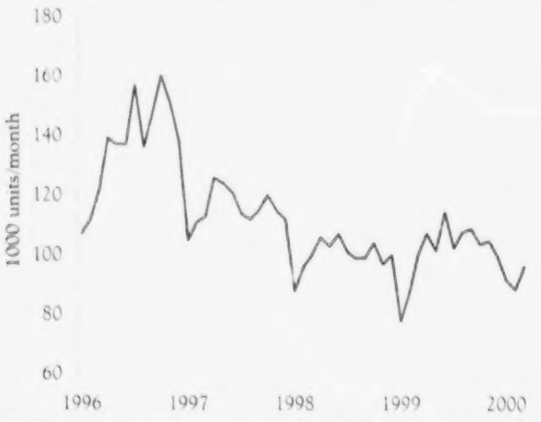
2.2.4 Construction in Japan

Japan reported an increase in housing starts in 1999, to 1.21 million units, 1.3% more than in 1998, a year of economic crisis (graph 2.2.2). However, 1999 starts were still 429,000 (26%) less than in 1996, so the small increase recorded in 1999 did not go far in compensating the falls in 1998. Furthermore, this increase took place against a background of incentives put in place by the Japanese government to stimulate consumption. Presumably without these measures, the performance of the construction sector would have been even weaker. The fall in the housing market since 1996 reflects no doubt the general lack of dynamism of the Japanese economy as well as the insecurity which arises from changes in the functioning of the traditionally very stable employment patterns in Japan.

Some structural factors may also be behind these developments in the housing market, notably the ageing of the population and the limited availability of constructable land. Japanese home owners are also now tending to build higher quality, longer-lasting houses, often demolishing the old building and replacing it with a new one on the same site. This would tend to reduce the number of starts as the population is stable and each house has a longer useful life.

GRAPH 2.2.2

Housing starts in Japan, 1996-2000



Source: Japan Wood-Product Information and Research Center, 2000.

In 1999, 565,000 Japanese housing starts were for wood-framed houses, 46.6% of the total (graph 2.2.3). This includes both traditional Japanese post-and-beam methods, which account for over 80% of wood frame starts, and North American style "platform frame" or "2x4 type" construction, which is increasing its share of the wood frame construction market

2.2.5 Construction in the transition economies

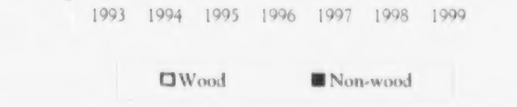
Table 2.2.2, extracted from the Economic *Survey for Europe* and based on several different types of information[1] (see footnote to the table), demonstrates the extreme volatility of the construction sector in transition economies and the lack of a single regional trend, as national factors influencing the construction sector predominate. There is nevertheless a tendency (by no means universal) for construction growth to be stronger in those countries where the transition process is more advanced.

Four groups can be identified, on the basis of developments in 1999:

- **Strong growth:** includes Hungary, Slovenia and

GRAPH 2.2.3

Share of wood and non-wood housing in Japan, 1993-1999



Source: Japan Wood-Product Information and Research Center, 2000.

---

[1] For that reason the figures are not exactly the same as those provided by Euroconstruct for its four transition country members, although the direction and intensity of change coincide well.

Latvia, in all of which there has been sustained growth over several years, and Kazakhstan, where the 26% rise in 1999 only partially corrected steep falls over the previous three years;

- **Moderate growth/stability:** includes Poland, whose growth slowed somewhat after two years of strong growth, Russia, where the 5.4% growth rate started to counteract the drops over the past three years, and Belarus, where a slight fall followed two years of strong expansion;
- **Moderate fall:** includes Bosnia and Herzegovina and Croatia, where construction activity slowed down after post-war growth, as well as the Czech Republic and The former Yugoslav Republic of Macedonia, where the construction sector has been contracting for several years;
- **Steep falls:** includes Slovakia and Lithuania, where construction contracted sharply after a period of expansion, and Romania and Yugoslavia, where construction activity has been falling sharply for some time.

TABLE 2.2.2

Gross construction output[a] in the ECE transition economies, 1996-1999

(Annual percentage change)

	1996	*1997*	*1998*	*1999*
Bosnia and Herzegovina			17.5	-8.4
Bulgaria	17.5	-4.4	-15.5	..
Croatia	9.0	16.7	0.7	-7.7
Czech Republic	5.3	-3.9	-7.0	-6.5
Hungary	-0.1	9.7	13.1	6.1
Poland	4.6	17.1	11.0	3.2
Romania	3.7	-24.4	-0.6	-19.5 [b]
Slovakia	4.4	9.2	-3.5	-25.8
Slovenia	-2.5	-5.2	1.7	10.7
The former Yugoslav Republic of Macedonia	2.0	-16.0	-9.0	-7.0 [c]
Yugoslavia	-9.0	-3.0	-6.0	-21.0
Estonia	21.0	15.0	..	..
Latvia	5.3	8.2	16.5	7.8
Lithuania	-7.2	12.3	22.6	-14.2 [d]
Belarus	-2.0	15.0	16.0	-1.0
Kazakhstan	-36.0	-4.0	-17.6	26.4 [e]
Kyrgyzstan	-31.0	14.0	-47.7	..
Republic of Moldova	-13.0	-12.0	..	..
Russian Federation	-14.0	-6.0	-5.0	5.4
Ukraine	-31.0	-9.9	2.7	..

[a] In Croatia, Slovenia, the former Yugoslav Republic of Macedonia and Yugoslavia construction refers to effective working time. In Poland work abroad and by enterprises not classified in construction is excluded. In Estonia construction refers to sales of construction work. In Latvia, Lithuania, Belarus, Kazakhstan, Kyrgyzstan, Republic of Moldova, Russian Federation and Ukraine construction refers to the volume of work done by construction enterprises and companies.

[b] January-June.

[c] January-July.

[d] January-November.

[e] *January-September.*

Source: National statistics; CIS Statistical Committee; direct communications from national statistical offices to UN/ECE secretariat, 2000.

Chapter 3

Effects of the December 1999 Storms on European Timber Markets

Highlights

- Severe windstorms felled 193 million m^3 of roundwood in December 1999, the equivalent of 2 years' harvest in affected countries.
- Roundwood markets in Europe were in chaos with sharp falls in prices initially, although some order had been restored by mid 2000.
- Government measures intervened to stabilise markets, assist forest owners and provide necessary infrastructure. Some planned harvests were postponed outside the storm-damaged zones.
- Considerable roundwood was salvaged quickly, or stored, before the onset of attack by pathogens or fire.
- Existing trade channels within Europe were strengthened and new markets were found in central and eastern European countries and in Asia.
- Similar to the 1990 storm's effects on wood products markets, the fluctuations in supply and price were absorbed during primary processing and there were little distinguishable effects in sawnwood, panels and pulp production, prices or sales.
- Greater market calamity was mitigated through sector solidarity.
- The crisis will have some long-term benefits for the sector due to its valuable public relations opportunities, new export and energy markets, and development of harvesting, transportation and manufacturing capacity.

3.1 Introduction

3.1.1 *Three storms of unprecedented violence sweep Europe in one month*

Europe was swept by severe windstorms in December 1999 which left paths of destruction in many European forests, especially in France, Germany and Switzerland. Millions of trees were broken and uprooted and millions of cubic metres of roundwood were left for forest managers to harvest before the onset of infestations of insects and disease or fires.

While some countries experienced the equivalent of several years worth of harvest in a day, some localities had most of their forests felled with sudden, direct consequences for the forest-based industries and people's livelihoods, not to mention ravaged landscapes. While over time the forests will regenerate, the scars of the storm will last for generations in the worst hit communities.

There were in fact three hurricanes that struck Europe in December 1999. An early windstorm on 4 December, named Anatol, caused damage principally in Sweden and Denmark. The second major storm, named Lothar, came on 25-26 December and decimated forests in northern France, Switzerland, Germany, Belgium and other countries to the east. And then the third wind and rainstorm, named Martin, followed on 27-28 December and swept through the southern half of France, moving eastward through Switzerland, Austria and ending in the Baltic countries unless there was unreported damage in Russia.

3.1.2 *What happened when, where and why?*

The purpose of this special chapter on the market effects of the storm extensive damage is multi-fold. First, there has never been a storm measured which resulted in such damage, and the impacts on timber markets are both immediate and will continue to skew markets for 2 to 3 years. Second, as explained below, this storm will not be the last and lessons learned this year can help after future storms, both in the countries which sustained damage this time, and for those countries which incur storm damage the next time. And third, the Joint Timber Committee and European Forestry Commission Session will discuss the storm damage as a special topic; this chapter provides background information and brings forth topics for discussion.

Information for this chapter was collected primarily through two meetings held in Geneva which focussed on the storms' effects on markets. The first meeting brought together representatives of the governments[1], trade and forest owners from France, Germany and Switzerland in March 2000. Later in June, the Joint FAO/ECE/ILO Committee on Forest Technology, Management and Training discussed the storms and their effects on forest management and forest products markets as their special topic. The secretariat is indebted to the meeting participants for their insight and information for this chapter. In addition the trade press has documented the evolving situation and their information is incorporated here. Finally the Timber Committee established a clearing house for information on its website in January 2000 and the links to other websites, especially those in France, Germany and Switzerland were beneficial too.

Although this chapter focuses on the 3 main countries which sustained storm damage, France, Germany and Switzerland (in alphabetical order as well as in order of magnitude of damage sustained), numerous other countries incurred substantial damage. In Germany, the overall material damage was estimated at over $10 billion, including $1 billion in forests. Lack of mention of other countries' situations is not intended to reflect any opinion on the part of the authors, but rather either a lack of information or a lack of time in preparing the chapter.

This story focuses on the forest sector market effects, however there were also during the storm or in the clear up phase, terrible consequences in some localities for wildlife habitat, for personal property struck by falling trees, for infrastructure such as electric and telephone lines, etc. Other economic sectors were also decimated and lack of mention does not indicate a lack of recognition and concern, but rather a focus on this sector.

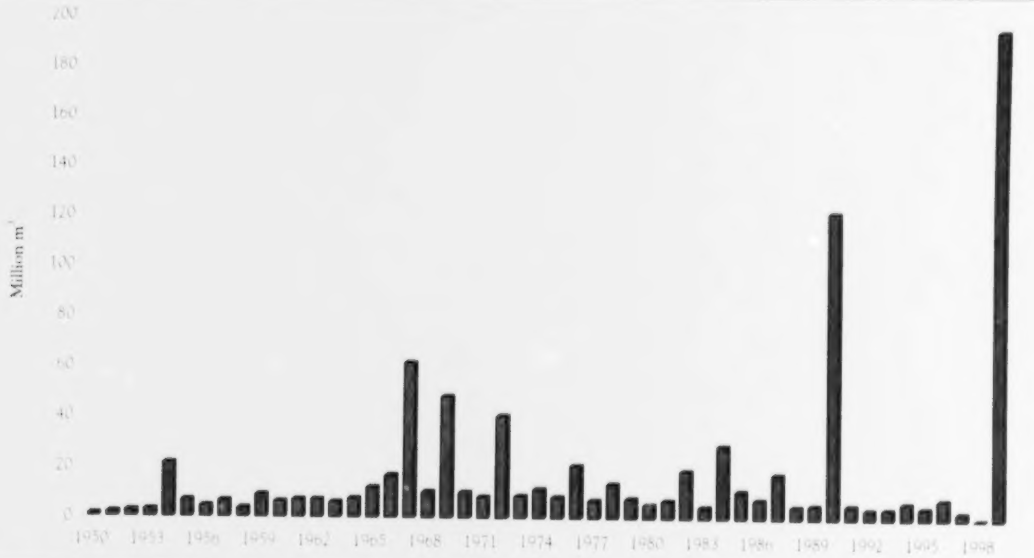
Most tragic of all was the loss of life. In Europe, at least a hundred deaths can be attributed to the storm. Perhaps the most affected group has been forest workers engaged in the extremely hard and dangerous work of clearing wind thrown trees. There were 19 deaths in German harvesting operations alone. Our sincere sympathies go out to all victims of the storm.

---

[1] The authors are especially grateful to the leaders of delegations to the two meetings: From France: Mr. Paul Delduc and Mr. Roger Bonneviale, Ministère de l'Agriculture et de la Pêche, and Mr. Pierre Verneret, Fédération Nationale du Bois; from Germany: Mr. Johannes Dengg, Federal Ministry of Food, Agriculture and Forestry; and from Switzerland: Mr. Thomas Grünenfelder, Office fédéral de l'Environnement, des Forêts et du Paysage.

GRAPH 3.1.1

Windstorm damage in European forests, 1950-1999



Source: Mr. Mart-Jan Schelhaas, Alterra, Netherlands, 2000.

3.1.3 How exceptional is the 1999 storm damage?

Storms have frequently caused "catastrophic" damage to Europe's forests – windblows of over 20 million m³ have occurred about 10 times since the early 1950s (graph 3.1.1). The damage sustained in 1990 and 1999 was by far the worst of all these years. There is insufficient evidence to demonstrate that storms are becoming more frequent or more severe. However, enormous storm damage has occurred regularly and, it is safe to assume, will occur again.

For very large volumes of wood to blow down, two conditions are necessary: an excessively powerful meteorological event and a forest ecosystem with insufficient wind resistance. Both conditions were met in 1999. "Lothar" and "Martin" were exceptionally violent storms.

A bizarre meteorological combination combined 3 factors which unleashed the 26-28 December storms: 1. a blast of strong polar air, 2. a jet stream oscillating between 350 and 400 kph compared to the normal 100 kph, and 3. a series of zones of extremely low pressure at low altitudes. Taken separately, none of these factors would have set off a storm of this magnitude, but taken together they detonated an explosion which ripped through Europe.

After one wave of wind passed, another followed as the turbulence created more zones of depression mixed with mounting humid tropical air. The result was heavy rain and dense, wet snow where temperatures were below freezing. At higher altitudes tree limbs snapped and saplings bent over from the weight of the heavy, wet snow. Clean-up became dangerous, if not impossible, above the snow line.

Wind velocities near Geneva, Switzerland on top of the Jura Mountains, exceeded 200 kph (approximately 125 miles per hour). In other areas of Switzerland winds were measured at 240 kph. In France, most of the country sustained winds near 150 kph or above in one of the two storms. In many areas of France and western Switzerland, heavy rains throughout December preceded the storms (reaching record rainfalls for the year). This meant little resistance from water-soaked soils to the movement of the root systems. Many trees were simply blown down while others were broken, leaving more unusable wood than in the uprooted trees.

Based on historical observations, the worst months for storm damage in forests are September, November, January and February (doctoral thesis by Dr. D. Doll, University of Lyon, 1988, as reported by *La Forêt Privée*, nos. 198 and 199). These averages will undoubtedly be changed by the December 1999 storms.

The sensitivity of the forest to storms is of course a function of the site, the species and the silviculture. However, a report prepared for the French authorities attributes the increase over time in forest damage due to storms in France to a number of factors:

- a greater forest area;
- higher standing volume per hectare;
- replacement of (relatively wind stable) coppice and coppice with standards by high forest;
- more stands with high dominant height; and
- increase in certain conifers, such as Douglas fir, spruce and fir. (Source: Birot, *et al.* "Expertise collective sur les tempêtes, la sensibilité des forêts et sur leur reconstitution", 2000".)

3.2 Damage magnitude: the equivalent of 2 years' harvest in 3 days!

The most severe storm damage occurred in France, Germany and Switzerland, however many other countries sustained significant damage (graph 3.2.1 and table 3.2.1). In the 8 countries sustaining significant damage, the windthrow was equivalent to 2 years' harvest. In all of Europe the damage was equivalent to a half year's harvest.

TABLE 3.2.1

December 1999 windthrow versus 1998 annual removals in Europe

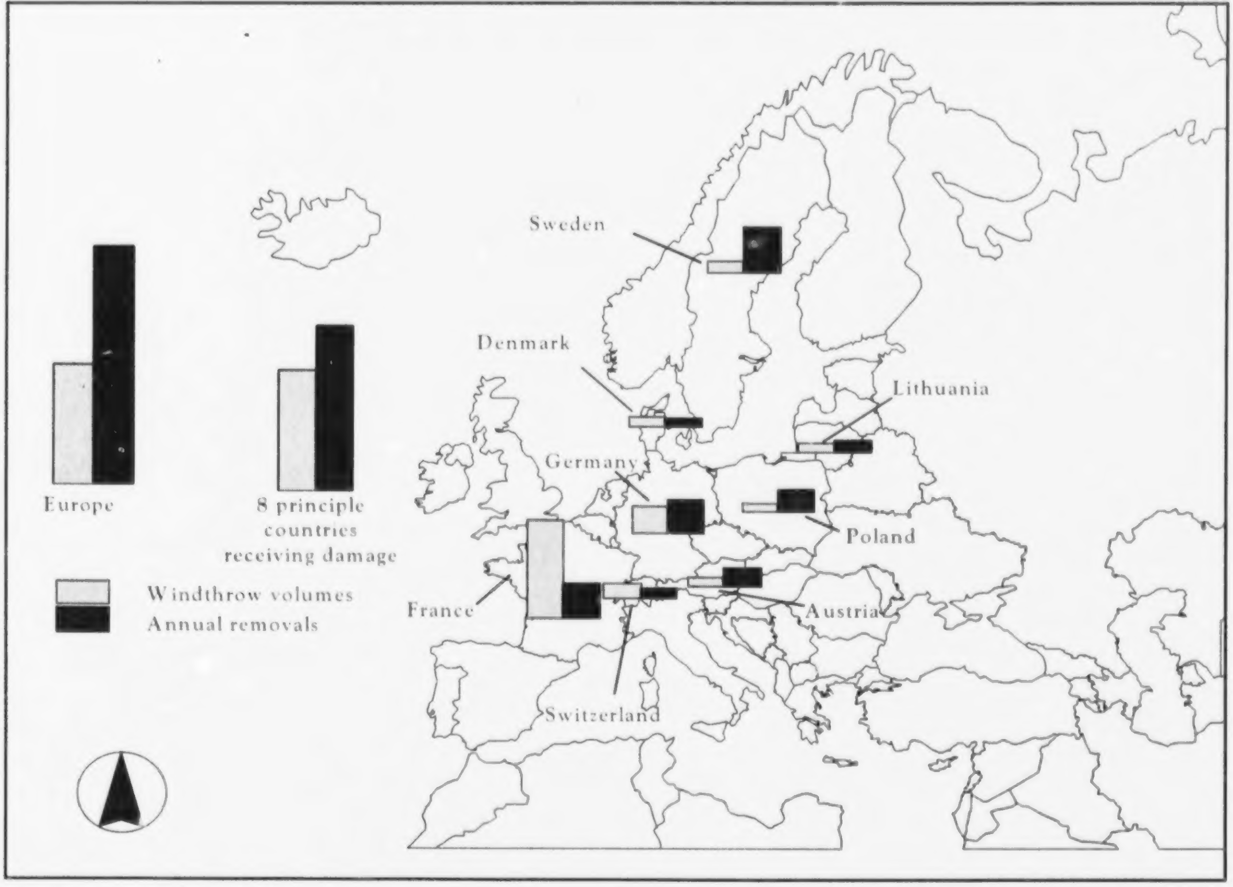
(Million m^3)

	Windthrow volumes	*Annual removals*	*% of annual removals*
France	139.6	42.9	325.4
Germany	30.0	39.0	76.9
Switzerland	12.1	4.2	288.1
Sweden	5.0	58.1	8.6
Denmark	3.5	2.2	159.1
Poland	2.0	23.3	8.6
Austria	0.4	14.0	2.9
Lithuania	0.4	4.9	8.2
Subtotal	193.0	188.6	102.3
Belgium	Minor	4.1	-
Estonia	Minor	6.1	-
Latvia	Minor	10.0	-
Spain	Minor	15.6	-
Other countries		156.4	-
Total Europe	193.0	380.8	50.7

Sources: National reports; ECE/FAO TIMBER database; and www.unece.org/trade/timber, 2000.

GRAPH 3.2.1

Windthrow versus annual removals in Europe, 1999



Sources: ECE/FAO TIMBER database; national reports; and www.unece.org/trade/timber, 2000.

The table shows only part of the story as the volumes of windthrow were based on surveys in January and February 2000. Some mountainous regions were surveyed by air due to roads blocked by fallen trees and snow. However the damage reports had not changed significantly by summer 2000.

The storm damage represents a sudden, involuntary increase in supply, making available a large amount of wood, whatever the levels of demand. It follows from this that the seller – the forest owner – loses all freedom of action in the market discussions, and becomes a price-taker. Among the options to protect prices and market equilibrium and to minimize losses (in the absence of government intervention) are the following, all of which forest owners put into action:

- Reduce supply as much as possible (e.g. by leaving wood in the forest or arranging for other suppliers not to harvest).
- Spread supply over a longer period (e.g. by stocking harvested roundwood).
- Find new or increase existing outlets (e.g. energy, raw material exports).

Also entering into the equation were the higher harvesting costs and lower productivity due to difficult operating conditions. Logging crews were in limited supply and therefore costs for their services rose.

Transport costs were higher than normal because of scattered location of logging sites. Hauling distances increased dramatically to transport roundwood to mills outside the storm zones, either for export or for domestic markets unable to draw from local forest resources due to temporary logging bans.

Governments are faced with difficult policy dilemmas of how to help the main losers, i.e. the forest owners, who have not only seen the prices they receive fall and their production costs rise, but also the destruction of capital stock for several decades. Governments must act quickly without penalizing wood buyers or infringing the international law in matters such as migration of labour, subsidies to domestic producers, etc. Governments also provided many forms of assistance as explained below.

The real question is what percentage of the fallen timber would be usable and removable from Europe's forests? Government estimates were that only 50 to 75% of the storm-felled timber would ever make it to the market. Much of the rest would be left in the woods because it is either too damaged to be economically removed, or because it is inaccessible in mountains or on steep hillsides.

Other large portions of the damaged timber would be consumed in local uses, mainly for firewood, which will never show in national statistics. Some additional volumes were given to sawmills by owners of small forest tracts in compensation for clearing roads and forests, and these volumes too will not appear in statistics. One of the lessons learned in Germany after the last major storms in Europe in 1990 was that approximately 30% of the estimated windthrow removals from forests could never be found in the official statistics. There were also reports of theft of logs during the disorder which followed the storms.

Of the approximately 140 million m^3 of roundwood blown down in France, only 55 million m^3 were estimated to be recoverable (Fédération Nationale du Bois, May 2000). As of May 2000 most of that, about 30 million m^3, was still in the forests, although a small volume was properly stocked there. Approximately two-thirds of the windthrow was on private forests (90.1 million m^3) and the rest on public forests. By the end of May, the equivalent of a year's harvest had been removed from forests.

In Switzerland, about 40% of the storm-felled timber was harvested and most of that already sold in June 2000 – six months after the storm. Another 35% will be recovered until spring 2001 and the remaining of 25% will be left in the forest and never reach the market.

In Switzerland, wood will be removed if it:

- presents a hazard, for example blocking streams or creating a potential landslide;
- presents a phytosanitary risk;
- disturbs recreational uses of the forest;
- hinders regeneration;
- (and last but perhaps of greater importance than the above) is economical.

Fallen timber will not removed from Swiss forests if:

- extraction costs are higher than expected revenue;
- it might prevent landslides or erosion;
- it might aid regeneration;
- it is valuable for nature conservation. (Source: Messrs Y. Kazemi and R. Jenni from FAO/ECE/ILO Joint Committee tour, 2000.)

In all countries trees which were not uprooted, but either blown over or are leaning with some of their roots still in the earth, are being left until last for cutting.

Of the amount that will be removed from forests, veneer logs from large-diameter hardwoods like beech and white oak are the most valuable. Sawlogs for sawnwood and barrel production, especially of oak and beech, but also of spruce, fir (including Douglas fir) and pine will be of high value too when they did not sustain any damage. Therefore, the processing of these high-value logs has had priority in the clearing operations.

The small-diameter and damaged larger diameter logs for pulp, panel and fuel production will be the majority of the volume, but not all of this will be merchantable.

Competition for the low-priced pulpwood was keen between buyers for pulp, fuel and panel production.

The breakdown between hardwoods and softwoods varies by country. In Germany and Switzerland 20% was estimated to have been hardwood (*Tropical Timbers* (now *hardwoodmarkets.com*), February, 2000). In France, this ratio reaches 35%.

The breakdown between private and public forests varies by country. In Switzerland, 40% was in private and 60% was in public forests. In France, 14% of the volume of the fallen timber was located in state-owned forests, 20% in community-owned forests and the rest in private forests.

The value of the storm-felled timber varied considerably based on its quality (normal parameters of size, straightness, number of natural defects, plus potential quality reductions due to storm-related damage), location, degree of difficulty in harvesting and durability against fungal attack and bacteriological discoloration. For example, to avoid sharp price drops, it is necessary to move beech out of the forest as quickly as possible because of its susceptibility to discoloration.

3.3 Market effects: potential enormous imbalances mitigated through sector solidarity

3.3.1 Surplus supply on the forest floor

The sudden volume of roundwood on the ground sent shock waves through Europe's roundwood markets. However, prices for most wood products were relatively unaffected: sawnwood, panel and pulp prices did not change considerably with the lower raw material costs. The secondary-processed wood products, like furniture, cabinetry, joinery and other value-added products did not feel the roundwood glut as all effects had been dampened by this point in the chain.

Some mitigating factors exist: 1. the economic situation is good throughout most of Europe and Asia meaning a high demand for the roundwood and its products; and 2. the storms' occurrence in December gave some lead time to remove or store and protect logs before the threat of attack by forest pests or fire. Nevertheless, the heavy snows at higher elevations and the wet soils at lower elevations meant restricted logging in many forests.

3.3.2 Stocking roundwood to soften market impact

To stretch the roundwood oversupply over the longest time frame possible, many forest managers stocked logs in the forest, partly aided by government subventions in France, Germany and Switzerland. The German authorities went further and provided financial incentives to cover sawmills' increased inventory carrying costs for stocking sawnwood at the mill. For the same purpose, the French government granted low-interest loans.

Stocking has its costs and government assistance (e.g. subsidies for investment) was usually instrumental in inciting forest managers to initiate long-term storage. In Baden-Württemberg, Germany, 20% of the windthrown logs had been stocked in the forest or in adjoining areas as of May 2000 (*Le Bois National*, June, 2000).

The mechanisms for stocking roundwood assure protection against insect, fungal and bacterial attack and help to relieve market pressure. Submersion in water was used heavily in the 1990 storms, but was closely scrutinised this year because of potential water pollution from run-off, seepage into the ground water or direct pollution of the water body in which it is posed. As a result special storage ponds were created at a relatively high cost to protection against pollution. The protection against the runoff from log storage was a subject of debate between the forest sector and environmentalists.

The main method used for long-term storage of valuable logs remains water spraying, either close to the damaged forests, if the initiative comes from the forest owner or at the mill yard. The effect of spraying with water is the same as that of submersion: it keeps logs too wet for infestation by pathogens (insects and fungi).

Dry storage is also possible if the logs can be protected from bacteria, fungi and insects by covering logs and in some cases replacing the oxygen with other gases. Beech, which deteriorates in quality faster than other species, is sometimes stored dry to avoid water discoloration, but this is quite risky.

Logistics and transport proved to be severe bottlenecks in processing and distributing large volumes of wood. In Germany, there have been strong and successful efforts to increase transport capacities: by train, 200,000 m^3 per month, by ship, 150,000 m^3 per month, and by truck, 200,000 m^3 per month.

3.3.3 Price effects: universally down, but to varying degrees

Roundwood prices in France, Germany and Switzerland as well as in other affected countries in some cases fell sharply. Despite initial government measures or agreements between forest owners associations and the wood industry federation to suggest a 20% reduction in sawlog, veneer log and pulpwood prices, roundwood prices fell by more, initially by at least 30%. The solidarity in Switzerland between local industry and their nearby forest owners was broken when international buyers offered substantially lower prices but for massive volumes. Log buyers defended reduced prices citing the high incidence of breakage and loss in sawing due to fissures in broken logs. The same could not be substantiated for pulplogs and energy wood, yet they too were often offered at lower prices to rid forests of fuel for fire, insects and disease.

Despite government intervention, markets found their new equilibrium at considerably lower roundwood prices than before. When the price fell low enough, buyers, including foreign buyers, were enticed to purchase, aided by the fortunate strong demand for wood products in 2000. Beech was in surplus and it also has been in high demand over the last few years for furniture, cabinetry and panelling, not only in Europe, but even more so in China, Korea and Japan.

How much did roundwood prices drop? The price reduction ranged from 20 to 100% with many sawlogs sold from 20 to 50% below their values before the storm. High value logs sought by veneer, sawnwood and barrel manufacturers that did not sustain visible damage, especially oak, maintained high prices. Beech logs were sold at 20 to 60% reductions to avoid the first heat waves in May which accelerated degradation by fungal staining. Spruce logs in Switzerland dropped some 30% in price (graph 3.3.1). Some quantities of roundwood on smaller forests were simply given away to entice loggers to haul away a few downed trees.

In Germany, by mid 2000, fir logs at the roadside were 30 to 35% lower and spruce logs were down less, by 25 to 30% over pre-storm prices (*Le Bois Naional,* July 2000). Beech logs were down 15% and oak had not changed price from 1999.

In Switzerland the sawlog prices fell on an average by 27% over 1999 prices from January through April 2000 (Swiss Federal Bureau of Statistics, June 2000). Roundwood prices had been declining in general throughout 1999, and this 27% reduction is a weighted average of the drop in spruce and fir log prices by 27.6% combined with beech log prices of 22.8% against the 4 months preceding the December storms. The price change is perhaps only partly due to the storm surplus, sawlog prices have fallen by 41% since 1992.

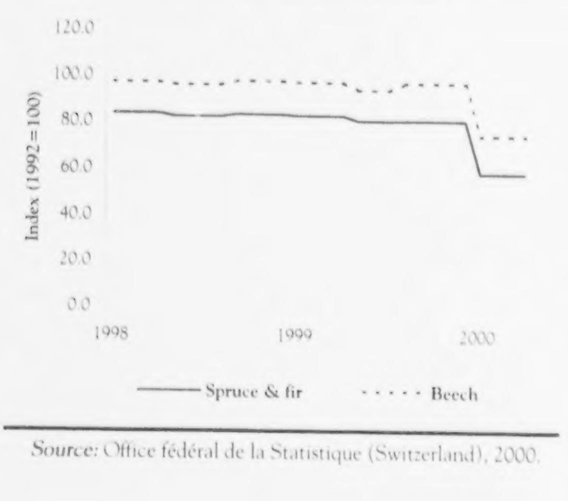
In France in the 2 months following the storm, pulpwood (also used for panels and fuel) and small-diameter logs were sold at a symbolic price. Average diameter sawlogs were down 70 to 80% from autumn 1999 prices. And large-diameter logs were selling at 50 to 80% of their pre-storm price depending on the species (*La Forêt Privée,* February 2000). Some higher-value logs of cherry and oak were reportedly purchased at premium prices, partly from concern for the near-future availability of needed raw materials in light of the harvesting freeze.

Pulpwood prices sunk. Competition from pulp, panel and energy producers did not buoy the market price (graph 3.3.2). In Switzerland pulpwood used for production of panels and pulp fell only by 4% from late 1999 to early 2000, much less than higher-valued sawlogs (Swiss Federal Bureau of Statistics, June 2000). In spite of the enormous supply of pulpwood, the prices of wood from the forest to the paper industry kept constant at the level of December 1999. But the prices of that wood to the wood-based panel factories fell by 17% in the period of January to April 2000.

Fuelwood prices fell in Switzerland at approximately the same rate as pulpwood, i.e. 3.9% between late 1999 and the first third of 2000 (Swiss Federal Bureau of Statistics, June 2000).

GRAPH 3.3.1

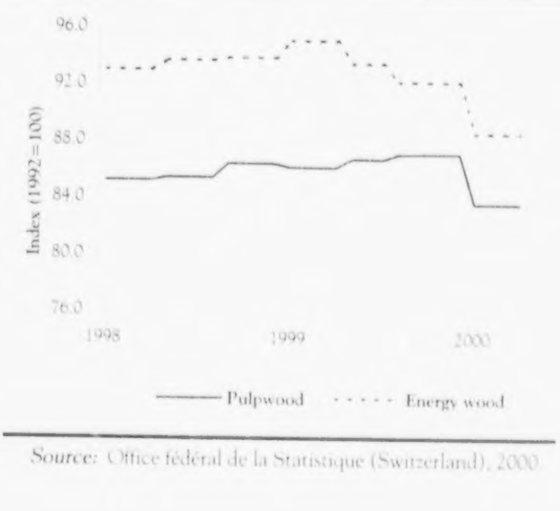
Sawlog prices in Switzerland, 1998-2000



Source: Office fédéral de la Statistique (Switzerland), 2000.

GRAPH 3.3.2

Pulpwood and energy wood prices in Switzerland, 1998-2000



Source: Office fédéral de la Statistique (Switzerland), 2000.

Fuelwood prices, for example fireplace wood, the highest valued fuelwood, dropped sharply. In urban areas such as Paris, firewood was sold at prices 75% lower than in early December 1999. This is rather normal in urban areas following catastrophes which fell street trees because they are much less desirable for sawmills due to the high incidence of imbedded metal and other foreign objects. Paris is a rather particular example however because of the enormous damage done to peri-urban forests (Bois de Vincennes, Bois de Boulogne and Forêt de Fontainebleau, among others, including national treasures such as the park and gardens surrounding the Château de Versailles). These forests have great value for leisure and recreation and the losses near the homes of millions of people sensitised them to the value of their forests. Hopefully the regeneration of these same forests and parks will be of educational value for the renewability of forest resources.

Initiatives described below to stimulate wood-based energy production did not have any immediate impact on fuelwood prices.

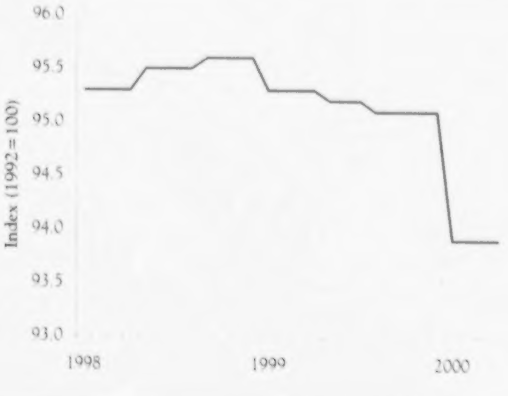
Sawnwood prices did not fall universally as a consequence of lower raw material costs. Sawmillers obtained lower yields from damaged stems, but were compensated by lower log costs. Beech sawnwood value fell slightly in Switzerland, but the graph may be misleading because of the combination of all quality levels (graph 3.3.3).

In Germany sawn hardwood prices may not necessarily have fallen only as a result of the storm (graph 3.3.4). Sawn softwood prices accelerated their 18-month decline, but this is probably due to overall market factors, not the temporary over-supply of roundwood (graph 3.3.5).

The freeze on harvesting any standing trees in France, Switzerland and Germany which went into effect immediately after the storms meant that mills located outside of the damage zones have had to use raw material from regions affected by the storm. This imposed higher transportation costs, some of which were mitigated by government subventions or amendment of regulations in

GRAPH 3.3.3

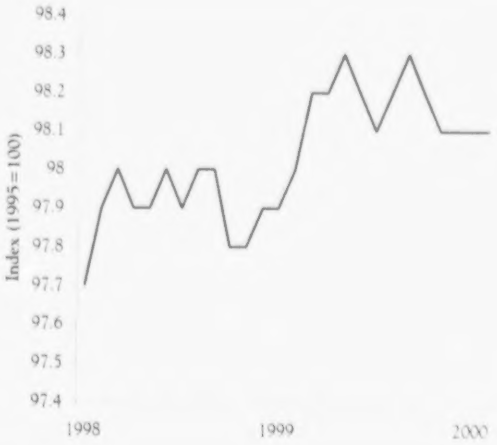
Spruce and fir sawnwood prices in Switzerland, 1998-2000



Source: Office fédéral de la Statistique (Switzerland), 2000.

GRAPH 3.3.4

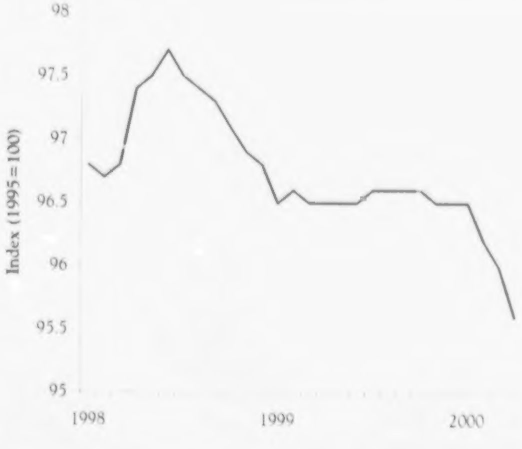
Sawn hardwood prices in Germany, 1998-2000



Source: Statistisches Bundesamt, 2000.

GRAPH 3.3.5

Sawn softwood prices in Germany, 1998-2000



Source: Statistisches Bundesamt, 2000.

favour of the timber transport. Despite solidarity in the forest and forest industries sector, the consequence of frozen harvests in forests which escaped the storms' damage meant costly inefficiencies in 2000. Sawmills "blessed" with surplus raw material in the storm zone had lower cost raw materials those mills "saved" from the storms that had to buy logs from unusually greater distances due to frozen national cuts (graph 3.3.6).

In Switzerland sawn spruce and fir prices registered a 1.2% average decline from pre-storm prices (Swiss Federal Bureau of Statistics, June 2000). The weak prices were especially apparent in lower quality sawnwood for packaging. As in roundwood, some of the decrease may be due to other factors because sawnwood prices are down over 6% from 1992.

Owners of small and large forests were the immediate losers from the storms. Not only did they face devastation of decades of planned forest management, in which their carefully-planned sustainable harvest schedule was destroyed, but they also incurred high costs of storm clean-up. These costs were not always compensated by sales of logs, especially when some logs were damaged or of less-valued species and sizes.

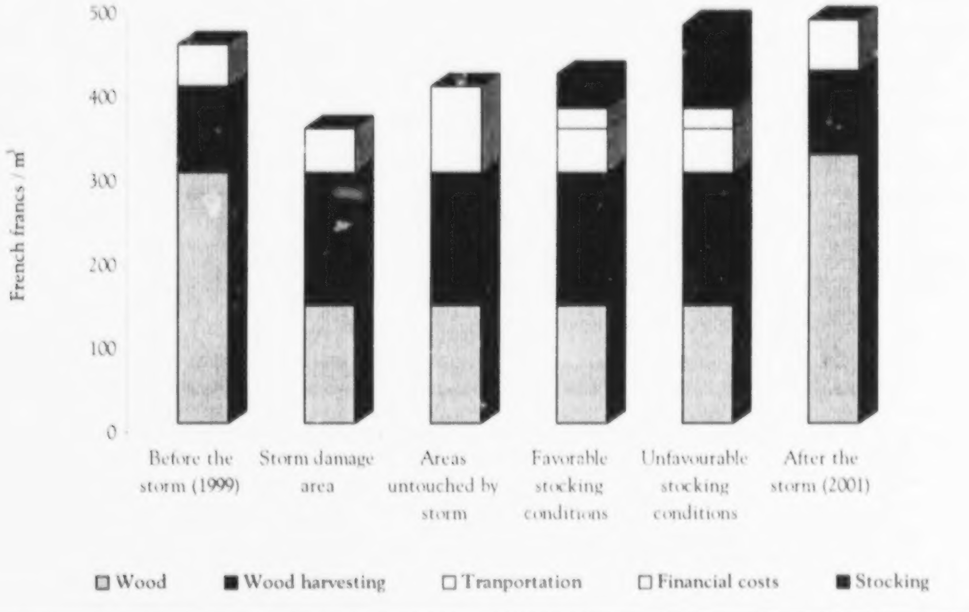
Some foreign logging crews were brought into the most damaged areas and some brought efficient harvesting equipment. There were more crews waiting to assist but unfortunately regulations about hiring temporary workers from certain countries, especially outside the EU, caused delays.

The trade press is to be commended for quickly publishing warnings to loggers untrained in the dangers of cleaning up after windstorms. Universally the first objective in the sanitation fellings was to protect loggers from any injury. But unfortunately this objective was not met and as happens each time, injuries were sustained and lives lost. More than 40 people sustained fatal injuries, all to untrained, non-professional forest workers and more non-fatal injuries were incurred according to reports to the June 2000 FAO/ECE/ILO Joint Committee on Forest Technology, Management and Training.

The Timber Committee established a clearinghouse for information and also published press releases calling attention to potential dangers. The Joint FAO/ECE/ILO Committee had published an *Acute Forest Damage Manual* [2] following the 1990 storms and it too was put on the website.

GRAPH 3.3.6

Additional costs of spruce and fir logs from storm damaged forests in France, 1999 to 2001



Note:.As of July 2000, roughly 7 francs=$1.

Source: Fédération Nationale du bois, 2000.

---

[2] ECE/TIM/DP/7.

3.3.4 *Production effects: difficulty in measurement at this early stage*

Obviously there has been an increase in roundwood removals from storm-damaged forests. But are these increases compensated by reduced harvests elsewhere in the countries as anticipated? The answer will only show in statistics for 2000 which will be received around March 2001.

And if there was increased roundwood produced, was it being turned into increased production of sawnwood, cants or sleepers/railroad ties? The first forecasts of production statistics will be available at the Timber Committee Session in October 2000 and any increases in production should show for sawnwood, panels and roundwood. Even then it may be difficult to determine whether increases in production are a result of demand-pull or supply-push, although this may show in strength of prices.

One case example for 1.3 million m^3 of wind-thrown roundwood in Switzerland sheds light on the initial resolution of the problem during the first quarter of 2000, i.e. through 31 March (table 3.3.1).

3.3.5 *Trade flow effects: traditional channels strengthened and new ones established*

One of the more positive outcomes of the windstorms was that they dispersed roundwood and sawnwood to new countries and in greater volumes. The trend in rising exports of European beech to China and other Asian destinations was documented last year in the *Review*. Now in 2000 there has been a massive increase in exports to China, in part due to dramatically rising consumption of roundwood (see special chapter 5 on China's forest products markets).

Switzerland, which had rarely exported logs to Austria, concluded a deal in early 2000 to export significant volumes of sawlogs. The traditional export market for roundwood with Switzerland is Italy, and fortunately the strong demand led to increased exports during the first quarters of 2000. Additional volumes of Swiss roundwood found markets across the border in France and Germany. All countries faced with large volumes of roundwood to sell have abandoned their desires to produce higher value-added exports and have been forced to export logs.

TABLE 3.3.1

Resolution of windthrown timber in one forest area in Switzerland, 2000

Destination	*Volume (1,000 m^3)*	*%*
Left with attached roots	440	34
Permanently left in forest	400	31
Harvested and sold	350	27
Wet storage	100	8
Dry storage	10	1
Total	1,300	100

Source: Service des forêts et de la faune du Canton de Fribourg (Switzerland), 2000.

An unexpected trade has developed *between* the countries most affected by the storms. First quarter trade reports are showing beech roundwood imports by Germany from France have increased roughly 60% in the first quarter of 2000 compared to 1999 (*ZMP*, 2000) (table 3.3.2). Germany's exports of beech roundwood to France fell by 27% during the same period, but Germany exported 14 times more beech roundwood to Switzerland (table 3.3.3).

TABLE 3.3.2

Imports of beech roundwood by Germany, 1999-2000

(m^3)

From	*January 1999*	*March 2000*	*% Change 1999 to 2000*
France	11,151	17,543	57.3
Switzerland	1,389	3,548	155.4
Denmark	1,427	3,319	132.6
Belgium	1,050	2,747	161.6
Romania	1,892	2,369	25.2
Czech Republic	1,477	1,658	12.3
Luxembourg	-	1,622	+++
Poland	1,322	1,140	-13.8
Slovakia	983	1,019	3.7
Other	3,361	2,847	-15.3
Total	24,052	37,812	57.2

Note: "+++" indicates increase over 300%.

Source: *ZMP*, 2000.

While omitted here for sake of presentation, *ZMP* also reported the unit value of the first quarter trade of beech roundwood. As roundwood includes many assortments for many uses, it is impossible to distinguish from customs statistics what countries imported veneer logs, which imported sawlogs and which imported pulpwood. Nevertheless some conjectures can be made that Germany imported high-quality roundwood from France and Switzerland in 2000, as the unit values were DM546 and DM583 respectively, both higher than for all other countries with the exception of the smaller volumes imported from Poland and Slovakia.

The astonishing development in Germany's exports of beech logs following the storms is the quadrupling of volume to China. Now the main export destination for beech logs, China takes a 30% share of Germany's exports of this valuable raw material. The export unit value was DM490, 44% lower than in 1999. What could only be described as new trade channels in 2000 for beech roundwood, tremendous increases of roundwood were shipped to Poland and Switzerland, but at very small unit values, DM6 and DM26 respectively. Denmark, which also suffered substantial damage in the December storms to its beech forests, also increased imports of German roundwood in early 2000, by over 3 times compared to 1999.

The German trade of beech sawnwood gives some indications of new market channels (table 3.3.4). As in roundwood, the big increase was exports to China, which rose over 3 times to reach approximately 41,000 m^3 according to preliminary reports (*ZMP*, 2000). While the unit value at DM806 was down 27.4% from 1999, it was among the highest unit values, indicating the better qualities of sawnwood. Over 40% of Germany's exports also went east, to the Czech Republic and to Poland. However their much lower unit values at approximately DM30 indicate that this could have been low-quality, pallet and packaging wood. While beech roundwood exports to Spain fell off in the first quarter of 2000, sawnwood exports advanced.

Germany's imports of beech sawnwood give evidence additional evidence of strengthening of some traditional supply sources, however these imports are only 15% the volume of exports (table 3.3.5). Greater volumes of beech sawnwood were imported from France in early 2000 while imports from Switzerland dropped. Despite surplus volumes of beech roundwood available, German imports of beech sawnwood increased about 13% over 1999 (*ZMP*, 2000). Sawn softwood imports rose 4% in the first quarter of 2000 to reach 1.1 million m^3, roughly twice as

TABLE 3.3.3

Exports of beech roundwood from Germany, 1999-2000

(m^3)

To	*January 1999*	*March 2000*	*% Change 1999 to 2000*
China	45,203	184,299	307.7
Poland	1,108	117,190	+++
Switzerland	8,871	96,984	+++
Sweden	64,953	67,640	4.1
Denmark	15,394	51,885	237.0
Italy	19,372	32,572	68.1
Hongkong SAR	23,422	26,941	15.0
Austria	10,768	8,437	-21.6
Japan	1,691	6,767	+++
France	8,076	5,890	-27.1
Netherlands	1,829	5,890	222.0
Taiwan PoC	3,176	3,190	0.4
Turkey	-	1,076	+++
Other	11,322	4,433	-60.8
Total	215,185	613,194	185.0

Note: "+++" indicates increase over 300%

Source: *ZMP*, 2000.

TABLE 3.3.4

Exports of beech sawnwood from Germany, 1999-2000

(m^3)

To	*January 1999*	*March 2000*	*% Change 1999 to 2000*
Czech Republic	1,345	57,399	+++
Poland	2,391	58,273	+++
China	12,272	40,514	230.1
Spain	21,951	28,687	30.7
Hongkong SAR	18,107	12,530	-30.8
UK	8,648	9,784	13.1
Netherlands	7,746	9,578	23.7
Italy	8,023	9,295	15.9
Sweden	835	6,099	+++
Denmark	2,357	2,377	0.8
Belgium	1,339	1,639	22.4
Finland	1,840	1,492	-18.9
Austria	915	1,408	53.9
Other	7,838	35,184	+++
Total	95,607	274,259	341

Note: "+++" indicates increase over 300%.

Source: *ZMP*, 2000.

TABLE 3.3.5

Imports of beech roundwood by Germany, 1999-2000

(m^3)

From	*January 1999*	*March 2000*	*% Change 1999 to 2000*
Romania	9,365	5,523	-41.0
Poland	6,350	5,383	-15.2
Slovakia	3,311	5,136	55.1
Czech Republic	4,937	4,88[illegible]	-1.0
Bosnia & Herzegovina	1,000	4,556	+++
Austria	1,113	3,596	223.1
France	2,984	3,566	19.5
Ukraine	1,170	2,136	82.6
Yugoslavia	1,837	1,316	-28.4
Switzerland	1,147	1,076	-6.2
Other	3,455	4,248	23.0
Total	36,669	41,425	13.0

Note: "+++" indicates increase over 300%.

Source: *ZMP*, 2000.

large a volume as sawn softwood exports which rose by 52% to reach over 500,000 m^3. Some of the largest volumes and greatest increases over the first quarter of 1999 were from France and Switzerland.

The table of Germany's first quarter exports of beech sawnwood has countries arranged in descending order by their 2000 volumes. If they had been ordered by 1999 volumes, Spain would have been first. However, in 2000 the first 3 places are taken by the Czech Republic, Poland and China. Reports from France indicate that substantial volumes of high quality sawn hardwood and roundwood are being shipped over the border to Spain, presumably at prices which make the French supply more advantageous. The windstorms in France also hit the Douglas fir producing region north of Spain, and some of these volumes were also exported south.

In the first quarter of 2000, German exports of coniferous roundwood (logs and pulpwood) rose to most destinations, except the storm affected countries of Denmark, France and Switzerland (as well as Norway and Spain) (table 3.3.6). Imports of coniferous roundwood also rose, even more strongly (+69% between the first quarter of 1999 and 2000) (table 3.3.7). The main increases concerned Russia (+232%), France (+113%), Finland (+118%), Denmark (+423%), Sweden (+373%), Latvia (+254%) and Luxembourg (+473%). This list indicates two main factors:

- Imports of storm-damaged roundwood from France, Denmark and Switzerland; and
- Imports from countries all around the Baltic to large new mills (sawmills and a pulpmill) located in north-eastern Germany, which have come on stream recently.

Some volumes of storm-felled logs were traded over the internet. A few electronic marketplaces were set up to trade roundwood, as well as coordinate the movement of machinery and harvesting crews.

TABLE 3.3.6

Exports of coniferous roundwood from Germany, 1999-2000

(m^3)

To	*January 1999*	*March 2000*	*% Change 1999 to 2000*
Austria	301,926	356,478	18.1
Czech republic	160,905	183,038	13.8
Italy	70,938	115,572	62.9
Sweden	55,948	71,279	27.4
Belgium	22,469	32,088	42.8
Denmark	26,851	17,937	-33.2
Finland	13,034	17,043	30.8
Norway	21,590	13,558	-37.2
Netherlands	7,561	8,082	6.9
France	7,064	6,970	-1.3
Japan	7,981	8,076	1.2
Switzerland	5,540	5,269	-4.9
Other	6,799	12,705	86.9
Total	708,606	848,095	19.7

Note: "+++" indicates increase over 300%.

Source: ZMP, 2000.

TABLE 3.3.7

Imports of coniferous roundwood by Germany, 1999-2000

(m^3)

From	*January 1999*	*March 2000*	*% Change 1999 to 2000*
Russia	55,093	183,144	232.4
Belgium	113,193	150,300	32.8
Czech Republic	96,615	80,238	-17.0
France	26,703	56,966	113.3
Finland	23,257	50,848	118.6
Estonia	66,044	47,864	-27.5
Denmark	7,083	37,040	+++
Sweden	7,811	36,953	+++
Switzerland	17,297	29,817	72.4
Lithuania	7,177	20,159	180.9
Netherlands	10,830	24,501	126.2
Luxembourg	2,640	14,569	+++
Other	9,810	11,435	16.6
Total	443,553	743,834	67.7

Note: "+++" indicates increase over 300%.

Source: ZMP, 2000.

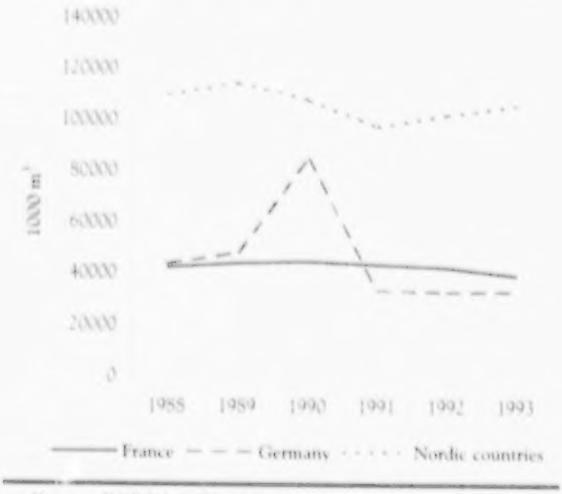
3.4 Comparisons with 1990 market effects: similar problems and solutions

The last really large storm to hit Europe was in February 1990 when over 115 m^3 of wood was felled mostly in Germany. It is interesting to trace the consequences of the 1990 storm as a guide to possible consequences of the 1999 storms. Disruptions to forest products markets occurred following the February 1990 storms as evidences by discontinuity of trends in roundwood production (removals) and trade. The comparisons to the earlier storms are complicated by the initiation of the transition process in 1990 from planned to market economies for some of the countries involved in the storm, e.g. in Poland as well as the reunification of Germany leading to breaks in statistical series just at the crucial time. At the time of writing this chapter, the Swiss government is commissioning a study on the comparisons between the 1990 and 1999 storms. Hopefully some preliminary findings will be presented at the Joint Timber Committee and European Forestry Commission Session in October 2000 at their special topic discussion on the storm damages.

From the TIMBER database some changes in trends indicate possible effects of the 1990 storms on forest products markets for that year and the following year or two. Roundwood removals went up in 1990 and then fell off in 1991 to compensate (graph 3.4.1). Weak forest products demand in the early 1990s makes it difficult to isolate the storm's effects on markets in 1992 and 1993.

GRAPH 3.4.1

Roundwood removals in selected European countries, 1988-1993



Source: ECE/FAO TIMBER database, 2000.

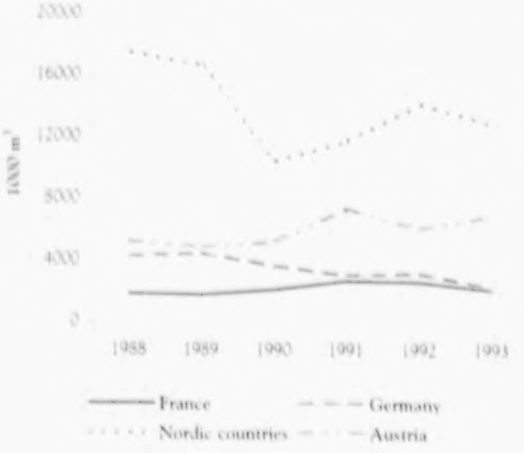
As in 2000, trade of roundwood accelerated in 1990 with Austria, Sweden and France buying large volumes of storm-felled roundwood (graph 3.4.2). Conversely, Germany which was hardest hit by the 1990 storm imported less and exported great volumes in 1990 and 1991 (graph 3.4.3). Similar to the situation in early 2000, the waves of market effects seem to have dampened before being reflected in the statistics after primary processing of sawnwood and panels.

The general economic state is beneficial in 2000 to stimulate the markets for the storm-damaged wood. However in 1990 the demand for construction was low in western Europe and the period of economic transition had just begun in central and eastern Europe. This year considerable quantities of roundwood and sawnwood, sometimes of lower qualities, have found markets in central and eastern European countries. Unfortunately in 1990 these same options were not available due to the economic and political situations.

In Switzerland the downward pressures on roundwood prices have been greater in 2000 than in 1990 (Swiss Federal Bureau of Statistics, June 2000). Hurricane Vivian, which struck Switzerland on 27 and 28 February 1990 felled almost 5 million m³ of timber (roughly 40% of the 1999 volume). The drop in spruce and fir sawlog

GRAPH 3.4.2

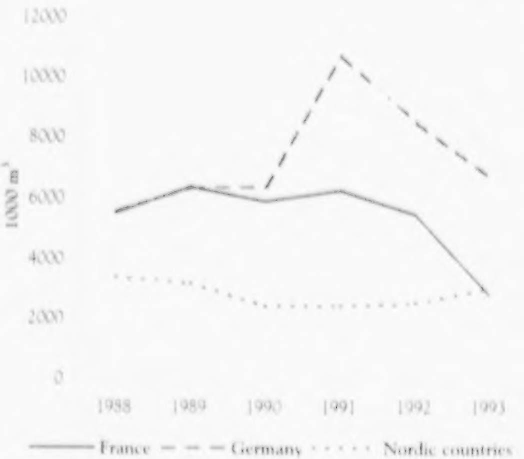
Roundwood imports in Europe, 1988-1993



Source: ECE/FAO TIMBER database, 2000.

GRAPH 3.4.3

Roundwood exports in Europe, 1988-1993



Source: ECE/FAO TIMBER database, 2000.

prices in 1990 averaged 16% (versus 28% in 2000) and beech sawlog prices fell 9% (versus 23% in 2000). Part of the explanation for the difference, other than the large disparity in windthrow volumes, was that in 1990 the storm's assault was at higher alpine valleys where coniferous species dominate. In 1999 the winds swept the Plateau Region in Switzerland between the Jura and Alps Mountains leaving more beech on the ground.

Another difference, not completely documented, may be the call in 2000 by some environmentalists for no intervention to clear up the damage. In Switzerland some new nature reserves were created where none of the damaged material would be salvaged. Other areas where there was no intervention in Switzerland were steep slopes where the fallen trees would promote regeneration, at least by blocking avalanches and rock slides. It is possible that some of these steep areas are inaccessible and thus where harvest costs and risks are greater than anticipated revenues. It also appears that there were less environmental restrictions in 1990 to establishing lake storage facilities.

3.5 Assistance by governments: quick and multi-dimensional responsiveness

Some government assistance was necessary following this natural disaster if the maximum amount of wood was to be brought to market and help provided to victims of the storms. In France, Germany and Switzerland, governments responded to the disasters by setting up a variety of means to assist the forest and forest industries sector. Many forest owners in these countries do not have any insurance against natural disasters, although it may be purchased. Many owners depend on governments to rescue them from such calamities, however there seem to be more discussions now about insurance schemes, either private, through associations or via governments.

3.5.1 France

In France measures were taken to stabilize markets by encouraging stocking of logs in forests in areas where they could be protected by water. But first forest roads had to be cleared and the government offered low-interest loans, 1.5% per year, for a maximum of 3 years, to assist in clearing the forests and stocking logs. Approximately $1 billion over 10 years was pledged to prepare forests for replanting and to replant. Additional funds were provided to reopen forest roads, take phyto-sanitary measures and to mobilise forest workers and equipment. Transportation was a bottleneck and weight limits on logging trucks were eased as well as subventions to assist in rail transportation. When France froze harvests of undamaged stands, financial assistance to offset increased transportation costs of storm-felled logs to mills in lesser damaged areas became essential to support the sector. In total, in early 2000, the French government allocated 2.5 billion francs (approximately $400 million at 6 francs/$) for the year plus another 12 billion francs (approximately $2 billion) in low-interest loans. While this will initiate important steps, the industry and forest owners claimed that these amounts were insufficient.

Halting the harvest of forests outside the damage zone had direct consequences for communities depending on the revenues of their forests. To them it seemed an oxymoron to have been spared of the damaging winds, but to have been prohibited from cutting in 2000! To reverse the situation where everyone is equally penalised, to a situation where everyone equally loses the least, the government provided low-interest loans to communities, both those hit by the storms as well as those whose forests were spared, but yet whose harvests were blocked in 2000.

3.5.2 Germany

Germany invoked the Forest Damages Compensation Act which immediately reduced harvests by 30% outside the windthrow areas. It also provides assistance and tax relief to forest owners. In contrast to France, there were no transportation subsidies, although weight restrictions on trucks were eased from 40 tons up to 46 tons. Despite some increased transport by rail and inland waterways, transportation remained a bottleneck in early 2000.

Subsidies and low-interest loans were made available for purchase of machinery and engaging emergency workers. The federal *laender*, specifically Baden-Württemberg and Bavaria earmarked approximately $60 million for removals of windfall timber, establishment of storage, reconstruction of roads, reforestation and transport to storage sites.

Additional funds were made available for promotion of the ecological qualities of timber products and further development of wood energy.

3.5.3 Switzerland

The priorities of the Swiss government were to 1. avoid accidents, 2. avoid damage to nearby forests, and 3. to use the fallen timber. To extend the processing time, 26 million Swiss francs (about $43 million) were provided for establishing stocking facilities to reduce market pressures. Funding was supplied to train loggers in order to avoid accidents and to provide harvesting credits (loans) to advance cutting.

Additional sums are allocated for promotion of the sector and to promote increased wood energy. It might be noted here that during the last few years, a number of European countries which are dependent upon nuclear energy, including Switzerland, have declared that they will shut their reactors and turn to alternatives, including bio-fuels. Thus governments are currently favourable towards wood-based energy development.

In order to avoid the loss of money by harvesting timber which will never find an appropriate market and in response to ecologists demands, at least 3 million m^3, or 25% of the storm-damaged timber will be left in forests and some new nature reserves have been established.

Additional monies are pledged to undertake studies of the 1999 storms and to compare them to the situation in 1990 in order to be better prepared the next time. Case studies are being written on how forest owners and sawmillers coped with the crisis. More comprehensive analyses than this one are planned to document the consequences on the wood industry in Switzerland and how it impacted and was impacted by neighbouring countries.

3.6 Positive outcomes?

It is not the intention to minimize the disaster and its losses. However some more positive aspects merit mention.

The public relations opportunities of the storms were endless and experts in governments, state forest services and forest owners associations were busy responding to journalists while capitalising on the public's attention. The forest and forest industry sector received considerable attention during the first quarter of 2000 as the media covered the crisis. Foresters were shown as emotional individuals who were shocked when their years of sustainable management were destroyed. They explained that the best forest management plans cannot anticipate catastrophes like this, but that regeneration after a natural windstorm is no different than regeneration after a clearcut or a forest fire. Given introspection by the media into the local storm damages, the public sympathised with residents of small communities whose livelihood was jeopardised by loss of the local forest resources.

Losses of trees in a forest are different than losses of favourite urban trees along streets and in parks to a concentrated population. City dwellers mobilised to help clear debris and then stood back and realised that the urban landscape had been changed, at least in the short term. Fund-raising and collections were initiated to restore urban parks and forests. Private citizens can buy their own tree planted in the gardens of the Chateau de Versailles in France. In Switzerland school children replanted damaged forests and returned to care for their trees and watch them grow.

Governments and public officials were found to be concerned and compassionate for the plight of the forests and the forest-based industries. The attention towards the sector will be maintained over the medium term as loans are paid back and the industry and forest restores its equilibrium. Some of the funding will be beneficial in the long term for the sector too when it leads to development of capacity, for example in the promotion of wood energy, or modernization of harvesting equipment. Networks of fuelwood distributors were established or extended.

One positive outcome from the solidarity of a crisis is the teamwork that surfaces to help each other. Some forest owners associations were strengthened as a result of the common cause. Forest owners and managers that hired efficient logging crews got a lesson in efficient, mechanized and safe harvesting practices. These managers will consider re-engaging skilled professionals with modern equipment for future silvicultural treatments.

3.7 Conclusion

This chapter illustrates some of the initial effects on forest products markets in Europe as a result of the December 1999 storms. The magnitude of the damage is daunting but the resilience of the forest and forest industry sector in restoring calm so quickly is commendable. Unfortunately the effects of the storm will endure for decades in some localities where their forests were devastated. Certainly new forests will be generated, however for some small and medium-sized enterprises dependent on a local wood resource, the delay and the increased transportation costs in the interim may be too much.

Undoubtedly the effects of the storm will influence the statistics for the next couple of years, especially in the form of increased trade within Europe and increased exports to Asian markets too. The effect on removals may be mitigated by the use of stored logs in the forest and adjustments to normal harvest schedules in unaffected forests. If merited, further analysis will be undertaken in the *Review* next year as better statistics are available for removals, production, trade and prices.

Some positive outcomes must be considered too, such as valuable public relations opportunities, new export markets, new transportation and manufacturing capacity, increased production of wood energy, modernisation of some harvesting and sawmill equipment, new training and experience of loggers and a strengthened solidarity of the sector.

Chapter 4

Poland's Forest Products Markets [1]

Highlights

- Poland's wood industry is among the forerunners to emerge from the 10-year period of transition and transformations, 1989 to 1999, as indicated by dramatic rises in production and exports.
- Liberalization of foreign trade in 1995 stimulated exports, mainly to western Europe, and predominantly to Germany. In 1999 Poland exported twice as much sawnwood, 8 times more particle board, 9 times more paper and paperboard and 12 times more furniture than in 1989.
- Furniture is the fastest-growing export product, primarily to western Europe, and this sector holds tremendous potential for further development and will be the driving force behind the development of wood industry.
- In comparison with other branches of Polish economy, the forest and forest industries sector is relatively well prepared for integration into the EU.
- Positive net trade in wood products reduces the national negative foreign-trade balance.
- A certified wood market has not yet developed in Poland.
- New associations and organizations within the wood sector were established during the last 10 years of political and economic transformations.
- In Poland the per capita consumption of wood products, with the exception of particle board, is low compared to EU countries.
- Production of MDF started in 1994 and OSB in 1997 and demand by export markets has grown rapidly.
- The Polish forest and forest industries sector is characterized by a high degree of raw material self-sufficiency, however industrial roundwood imports are increasing.
- Forest cover, of which over three-fourths is state owned, is forecast to grow to over one-third of the total land.

---

[1] By: Dr. Wladyslaw Strykowski, Deputy Director, Wood Technology Institute, Winiarska str. 1, PL-60 654 Poznan, Poland, Telephone +48 61 822 4700, Fax +48 61 822 4372, E-mail: W_Strykowski@itd.poznan.pl, and Dr. Ewa Ratajczak, Head of Wood Industries Economics Department, Wood Technology Institute, Poznan, Poland, Telephone +48 61 849 2461, E-mail: E_Ratajczak@itd.poznan.pl

Secretariat introduction

This chapter is one of a continuing series of chapters focussing on one ECE region country's forest products markets. This chapter was written by Dr. Wladyslaw Strykowski, Deputy Director and Dr. Ewa Ratajczak, Head of Wood Industries Economics Department, Institute of Wood Technology, Poznan, Poland. We thank Dr. Strykowski and Dr. Ratajczak for their valuable contribution to understanding the current situation in one central and eastern country that is progressing following the transition to a market economy. Their in-depth analysis focuses on the successes of the wood industry in preparing for integration into the European Union. However, the process has been difficult and that aspect of the story is not told here. The 2001 Joint Timber Committee and FAO European Forestry Commission Study Tour has proposed to visit Poland with a theme of the steps being taken by the forest and forest industries sector in preparation for EU integration.

4.1 General economic developments

In the second half of the 1990s Poland was one of the most dynamically developing countries in central and eastern Europe as reflected by basic macro-economic indices (table 4.1.1). This rapid growth slowed slightly at the end of 1998 and beginning of 1999 as a result of the implementation of federal policies to cool down the economy.

The deterioration of general economic conditions was demonstrated by slower growth of GNP and of investment expenditures as well as in the rise of unemployment. These phenomena were further accompanied by the increase in foreign trade deficit which reached 74 billion Polish zlotys ($18.6 billion). The wood products foreign trade balance in 1999 was positive and amounted to $1.3 billion.

The increase in the number of unemployed, over 2.5 million in February 2000, can be attributed to the Russian crisis, worsening economic conditions in western Europe as well as to the on-going restructuring processes of Polish industry (mainly smelting and coal mining industries).

On the other hand, in 1999 and in the first quarter of 2000, as a result of relatively high foreign investments, an increase in employment could be observed in the wood, furniture and pulp and paper industries. Total foreign investment was estimated by the State Agency for Foreign Investment at the end of 1998 at $100.1 billion. The biggest investors in the forest-wood sector included International Paper Company from the United States which invested $370 million in the paper industry and Kronospan (particle board and OSB) from Switzerland with an initial sum of $300,000.

TABLE 4.1.1

Polish economic indicators, 1996-1999

(% annual change)

Specification	*1996*	*1997*	*1998*	*1999*
Gross national product	6.0	6.8	4.8	4.1
Investments	19.2	22.2	15.8	17.1 [1]
Inflation	19.9	14.9	11.8	7.3
Rate of unemployment	13.2	10.3	10.4	13.0

[1] Initial data, enterprises employing more than 5 persons.

Source: "Information on Socio-Economical Situation of Poland", *Statistical Bulletin for 1995-2000*, Central Statistical Office, Warsaw, 2000.

When analysing data concerning industrial production for 1999, it is worth noting that there was an increase of wood and wood products output by 15.5% and of furniture production by 8.5% over 1998.

4.1.1 Development of the building and construction industry

In 1996-1999, mean annual growth of construction expressed in fixed prices was approximately 10%. The situation was much worse in the housing industry, in which there had been a regression for several years, because there is no coherent system of economic incentives. Between 1995 and 1999, only 70 to 80 thousand flats were built annually. This level of production can be compared to that of the 1950s. This explains why the housing deficit in relation to needs is estimated at 1.5 to 2 million flats.

The situation in the building and construction industry exerts a direct impact on the wood product market. Moreover, construction can stimulate or constrain consumption either directly (via the application of a given wood product in a housing unit which is either being built or repaired) or indirectly (as a consequence of needs connected with interior wood uses e.g. furniture). Generally speaking, the indirect impact of the demand associated with the development of building and construction industry is delayed and begins to show several years after the completion of a housing complex.

4.1.2 Wealth level of society

The primary and most general wealth determinant of a given society is the level and rate of growth of GNP. The demand for goods is influenced by the share of consumption in GNP and the level of disposable income (table 4.1.2).

Generally speaking, it can be said that after a period of considerable impoverishment of Polish society at the beginning of 1990s, a slow, albeit systematic, improvement of living standards has been observed as

TABLE 4.1.2

Consumption vs. gross national product in Poland, 1995-1999

(% of GNP)

	1995	*1996*	*1997*	*1998*	*1999*
Consumption	77.8	79.6	79.6	78.9	
of which:					
Individual (from personal income)	63.7	62.2	62.6	63.4	63.2

Sources: For years 1995-1998, *Statistical Yearbook 1999*, Central Statistical Office; for 1999, *Statistical Bulletin 2000*, No. 2, 2000.

evidenced by an increase in individual consumption from personal income.

This trend is well illustrated by the level of gross monthly remuneration in Poland which, in 1999, averaged $463 with $470 in industry in general of which: in wood industry – $358, furniture industry – $342 and in pulp and paper industry – $522. The growth rate of mean gross real remuneration in 1999 was 3.4%.

4.1.3 Demographic factors

Demographic and social factors exert a significant impact on the demand for furniture and wood products. The population has stabilized over the last 5 years at 38.7 million, of which approximately two-thirds live in urban areas. Roughly two-thirds, 23.9 million, are of working age. Some 51% of the population is women.

On the basis of national statistics, it can be said that the structure of Polish society, due to preferences of individual groups of its population and their purchasing behaviour, exercises an important influence on the demand for wood products. First and foremost, it is the demand for end-products such as furniture, houses made of wood and flooring materials. This, in turn, affects the size and structure of the demand for various types of wood materials.

4.2 Forest resources

In 1998 the area of *forests and forest lands* in Poland associated with the forest economy was 9 million hectares, of which forests made up 8.8 million hectares corresponding to 28.2% forest cover. Bearing in mind economic and natural conditions prevalent in Poland, it is believed that forest cover of Poland could be increased to 34% of its total area. It is estimated that it will be possible to achieve this percentage point increase in forest cover in Poland in the middle of the next century.

The forest ownership structure above clearly shows the dominant share, 78.4%, of forest owned by the State and managed by State Forests (table 4.2.1). A national debate has been going on in Poland for some time now concerning the problem of re-privatization or privatization procedures of forests. The scale of re-privatization is determined by forests nationalized earlier the total area of which amounted to 4.9 million ha. It is quite likely that former owners will obtain compensations from the state, but it has not been decided yet as to the form of these compensations.

Private forests make up 17.1% of the total forest area in Poland of which 16% belongs to over 900 thousand individual owners. Private forests are characterized by excessive fragmentation so that the average area owned by one owner is less than 1 ha. Harvesting of timber in privately-owned forests is less than half of public forests mainly due to lower ages of forest stands and less efficient management.

For several years now we can observe in Polish forests a steady increase in the proportion of hardwood species in relation to softwoods. The proportion of hardwood species in stands increased from 21.9% in 1990 to 23.0% in 1999. However, despite these favourable processes, softwood tree species remain dominant, making up 77% of total forest area, of which pine and larch make up 69%. Generally speaking, it can be said that Polish forests are relatively young. Stands of lower age classes (up to 40 years old) are dominant, constituting more than 41% of forest area, while the share of adult trees (over 80 years of age) take up about 17%. Consequently, stand utilization will increase when a visible change in their structure takes place. Average stand age in State Forests is 55 years, while in private forests it is 36 years.

TABLE 4.2.1

Structure of forest ownership in Poland

	1,000 ha	*%*
Total forests	8,813	100.0
Public	7,304	82.9
Owned by State Treasury	7,226	82.0
of which:		
Managed by State Forests	6,915	78.5
National parks	181	2.1
Owned by communes	78	0.9
Private	1,509	17.1
of which:		
Property of individual owners	1,415	16.1
Land cooperatives	68	0.8
Others	26	0.3

Sources: For years 1995-1998, *Statistical Yearbook 1999*, Central Statistical Office; for 1999, *Statistical Bulletin 2000*, No. 2, 2000.

In 1999 wood resources (growing stock) amounted to 1.6 billion cubic meters of large timber, of which nearly 86% was found in State Forests. Mean resources calculated per hectare amounted to 184 m^3/ha, with 201 m^3/ha in State Forests and 118 m^3/ha in private forests. The annual increment of forest resources in Poland is estimated at 56 million m^3, while the current level of removals averages 32 million m^3 or 57% of the annual increment.

Although a steady improvement in forest condition has been observed since 1995, it still leaves a lot to be desired. In 1999 30.7% of trees showed severe damage because of air pollution and, in comparison with other European countries, this level of damage is estimated as very high. Also in 1999, 60 thousand hectares of land were either renovated or afforested in State Forests. Additionally, the total of almost 12 thousand ha of formerly agricultural land or wasteland was afforested as part of the scheme to increase the level of forest cover. Table 4.2.2 shows the amount of felled wood taking into account different forms of ownership.

In December 1999 strong winds caused considerable losses in Polish forests. It is estimated that approximately 2.2 million m^3 of mainly medium-sized spruce, pine and fir was damaged by those winds.

4.3 Institutional framework for forest and forest industries

Following forest sector transformation, the forestry sector and wood industry were separated. In 2000, forestry is the responsibility of the Ministry of Environment. The Department of Forestry, Nature and Landscape Protection is responsible for the co-ordination of forest policies and legislation, cooperation with other departments and other ministries as well as for the co-operation with foreign countries. The same ministry also supervises the Office of Forest Management and Forest Geodesy which is responsible for management planning.

Forests which belong to the State Treasury (81.9% of all forests) are supervised directly by a state run organization called "Lasy Państwowe" (State Forests) in which we can distinguish the following three levels of supervision: 1. General Direction of State Forests; 2. Regional Direction of State Forests (17); and 3. Forest Districts (412). State Forests are run by the General Director with the aid of General Direction and Regional Directions of State Forests.

In the field of forestry, Poland realizes active co-operation with foreign countries and is a signatory of all major international contracts and agreements. For several years now the Central Statistical Office has been responsible for the development and dissemination of information connected with forestry in the form of a periodical entitled "Forestry". All major research projects

TABLE 4.2.2

Removals from Poland's forests, by forest ownership, 1990-1998

	1990	*1995*	*1998*
TOTAL (1,000 m^3)	18,676	22,492	24,917
Stemwood	17,617	20,651	23,107
Public forests	16,272	19,181	21,886
Owned by State Treasury	16,231	19,050	22,980
of which:			
Managed by State Forests	15,906	19,942	2,149
National parks	103	200	174
Owned by communes	41	131	127
Private forests [a]	1,345	1,470	1,221
Slash [b]	1,056	1,840	1,810
Stump wood [c]	3.3	0.7	0.1
Removals of stemwood per 100 ha of forest area in m^3	202.6	235.8	262.1
Public forests	225.4	264.1	299.6
of which:			
Managed by State Forests	233.7	273.4	310.8
Private forests [a]	91.2	98.4	80.9

[a] Until 1997, estimated data.

[b] Exclusively in public forests.

[c] A small volume of stumps is harvested.

Source: Central Statistical Office, 1999.

connected with forestry are carried out by the Research Institute of Forestry which cooperates with numerous foreign centres.

The most important legislative act regulating management of forest resources is the Forest Bill of 1991 together with the following amendments.

The Forest Bill comprises such legislative acts, enactments and regulations as:

- The Nature Protection Bill of 1991 (currently under amendment),
- The Bill on the Protection of Farm and Forest Land of 1995,
- State Forest Policy of 1997,
- Enactment No 30 on Forest Promotional Complexes of 1994,
- Enactment No 11 on Ecological Basis of Forest Management,
- National Programme for the Increase of Forest Cover, 1995,
- Spatial Planning Bill.

Furthermore, from 1990 to 1997 about 30 legislative regulations were published in the form of Ministerial Ordinances which are considered important for forest economy.

Generally speaking, non-privatized enterprises of wood, furniture and pulp and paper industries are supervised either by the Minister of Treasury or regional governors. Some sawmills are state owned now but they too should be privatized within 3 years. The Ministry of Privatization which was established at the beginning of 1990s was changed into the Ministry of Treasury which is the owner of all enterprises (including wood industry enterprises) which have not been privatized so far.

The structural and economic transformations taking place in Poland have led to changes in the approach to economic management and planning in industry. Newly developed programmes are of strategic character and are associated primarily with the development and utilization of the state budget as well as with the creation of marketplace mechanisms in relation to the above mentioned enterprises. Another important area of activity is privatization of state enterprises and development of the banking system.

The Ministry of Economy is responsible for the development of the economy. In the mid 1990s, bearing in mind the process of the integration of our country with the European Union, the Office of European Integration was established. Both forestry and wood industry have, in recent years, been intensively involved in preparations for the integration into the European Union.

For the past few years, organizations responsible for the transitional economy have been very active. They include: Agency for Industrial Development, State Foreign Investment Agency, Agency of Technique and Technology. Enterprises of the wood, furniture and pulp and paper industries have established new non-compulsory associations or producers' organizations which represent these companies and fulfil many other functions which are necessary for their proper operation.

The following associations and organizations have been established so far: Association of Wood-based Panels Producers, Polish Economical Chamber of Furniture Producers, The Polish Economic Chamber of Woodworking Industry, Association of Polish Papermakers, Polish Association of Eur-Pallets Producers.

The Institute of Wood Technology in Poznan, which has restructured to the conditions of market economy, carries out a wide range of activities for purposes of wood industry enterprises, while the Cellulose and Paper Institute in Lódz performs similar services for the pulp and paper industry.

4.4 Effects of the transition process

During the ten-year period of the implementation of the market economy in Poland, the foundations were laid to achieve economic targets. One of the major objectives was privatization of the economy.

Privatization processes in the wood sector are more advanced on average than in Polish industry. In 1999 more than 93% of production of the entire wood and furniture industries as well as 95% of the pulp and paper industry was manufactured in the private sector. Privatization in the whole Polish manufacturing industry is approximately 70%. The building woodwork, furniture and pulp and paper industries are the most privatized sectors.

It should be stressed that in Poland the importance of small and medium companies doing business in wood processing is much higher than on average in the entire Polish industry. In 1999, small enterprises (up to 50 persons) employed about 45% of workers in the wood industry. Of this over 35% were employed in furniture industry and 24% in the pulp and paper industry. However, in the entire Polish industry only about 23% of employment is in small enterprises. Small firms manufacture approximately 38% of the production value in wood industry, 35% in the furniture industry and 17% in the pulp and paper industry. The total proportion for the entire industry is 20%. As a rule, small wood processing companies are more efficient than big companies.

Systemic transformations resulted in a considerable strengthening of the forest-wood processing sector in

Poland as evidenced by the higher share of this sector both in the national income and in foreign trade balance.

The quality of many wood products manufactured in Poland is at world level quality, e.g. furniture and wood-based panels.

4.5 Integration into the EU

In comparison with other branches of the Polish economy, it can be said that the forest and forest industries sector as a whole is relatively well prepared for the process of integration with the EU member states. However, the situation varies depending on individual sectors and groups of enterprises of different sizes.

Generally speaking, a relatively higher degree of adjustment can be observed in large enterprises and the level of preparedness is believed to be worse in small- and medium-sized firms. On the other hand, when the problem is analysed from the point of view of various branches, the situation is better in such industries as wood-based panels, building woodwork, woodpulp and furniture. However, in sawmilling and paper manufacturing industries, it is relatively worse.

The major advantages of the Polish wood industry are: 1. high degree of advancement of privatization processes; 2. relatively high proportion of foreign investments; 3. high degree of self-sufficiency regarding the supply of wood raw material and wood materials; 4. considerable production potentials, i.e. excess capacity; 5. considerable adjustment of standards and regulations have been made to those currently in force in the EU member states. Additionally, the following elements also speak in favour of Poland: relatively low level of remuneration and energy prices in Poland, political stability and constantly improving economic stabilization expressed by a rising national income (albeit, somewhat weak last year).

The most serious obstacles in the adjustment of the wood industry to the requirements of the EU include: low labour efficiency; lower than the average level in the EU countries of modernization of production of certain wood products; considerable wear of production equipment; and limited possibilities of self-financing for further development.

At the moment of Poland's accession to the European Union, the majority of Polish entrepreneurs expect more opportunities than threats for the development of their firms.

4.6 Forest industry – production and consumption

The wood industry was among the first to overcome the crisis of the "transition period". This can be attributed primarily to dynamically developing furniture exports, and second to the restructuring of furniture enterprises, including on-going processes of ownership transformations.

After certain initial problems at the beginning of privatization, the current situation in Polish wood industry appears to have stabilized. In 1998 the proportion of wood, furniture and paper industries in gross national product amounted to 1.8%. Over 10 years, the share of wood industries in the total manufacturing (value of production) industry increased from 4.6% in 1989 to 8% in 1999.

Approximately 260,000 persons are employed in wood industries (data from 1999, in firms employing more than 5 persons) which constitutes 8.5% of all people employed in industry: about 119,000 persons are employed in the furniture industry, 32,000 in building woodwork industry, 35,000 in the sawmill industry, 14,000 in the wood-based panel industry and 39,000 in the pulp and paper industry.

The Polish wood industry is extremely dispersed, with the exception of wood-based panel and pulp industries. Out of over 60,000 firms, about 6,200 enterprises employ over 5 persons but only 860 companies engage more than 50 workers (this group includes nearly 390 furniture companies). In this current period of transformation, it was possible to observe processes of production concentration in some sectors of wood industry. This was especially true in the case of particle board and furniture production and this trend was similar to that observed in western Europe.

The economic crisis and the shock accompanying the initial phase of transformations were so severe that only some of the industries using wood as raw material were able to achieve the level of production of the late 1980s (table 4.6.1). This refers, in particular, to sawnwood, especially pine (graph 4.6.1). On the other hand, a favourable economic trend can be observed in the case of wood-based panels (graph 4.6.2) and paper (graph 4.6.3).

In the last decade, the wood industry was one of the industrial sectors which was characterized by the highest rate of production growth. However, in the last two years this rapid rate of production growth has slowed down: this slowdown was particularly noticeable in the sawmill and wood-based panel industries (table 4.6.2). The causes of this slump include:

- the collapse of the eastern market in mid 1998 which reduced export possibilities (especially of Polish furniture);
- economic stagnation observed in some western countries which are crucial markets for Polish wood products;
- persistent crisis on the housing market; and

- lack of revival in the internal demand resulting from the pauperization of large sections of the population.

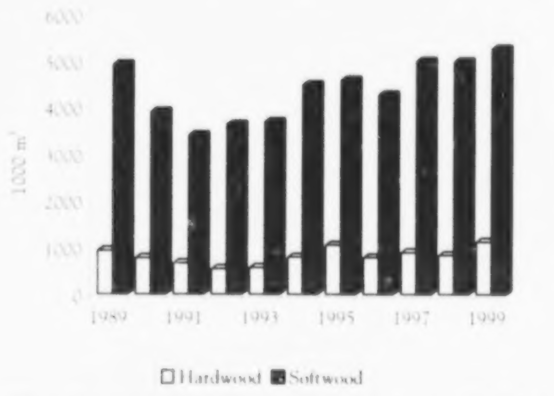
No significant changes in the possibilities of development of Polish wood industries are predicted in 2000.

Tendencies similar to those observed in the production sectors can be noticed in wood products consumption. Currently, the use of sawnwood is 9% lower than in 1989 because of the downturn in the construction industry and the decrease of furniture production. The consumption of plywood was down by 16%. On the other hand, consumption of particle board is almost twice as high as ten years ago, fibreboard 24% higher, paper and paparboard, up by 53% and furniture up by 40% (table 4.6.3).

Per capita consumption of wood products in Poland is much lower than in the EU countries. When we compare the level of wood consumption in Poland with that in the EU member states in 1998, it is evident that it was about 70% in the case of sawnwood, 93% for particle boards, 56% for MDF boards, 23% for fibrous pulps and 30% for paper and paparboard. The only exception is the fibreboard sector where the consumption in Poland is over twice that of western European countries (presumably because of consumption of fibreboard by the furniture industry, which is export-oriented). When expressed as wood equivalents, then the per capita utilization of all wood-based products in Poland in 1998 amounted to 0.42 m^3(r).

GRAPH 4.6.1

Sawnwood production in Poland, 1989-1999

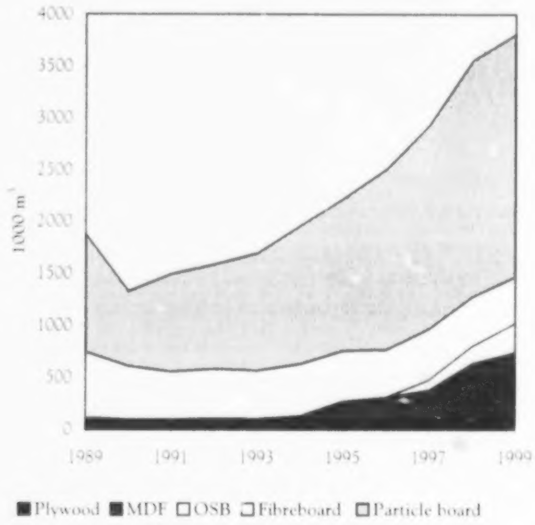


Note: For 1999, estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

GRAPH 4.6.2

Wood-based panels production in Poland, 1989-1999



Note: For 1999, estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

TABLE 4.6.1

Wood products production, 1989, 1998, 1999

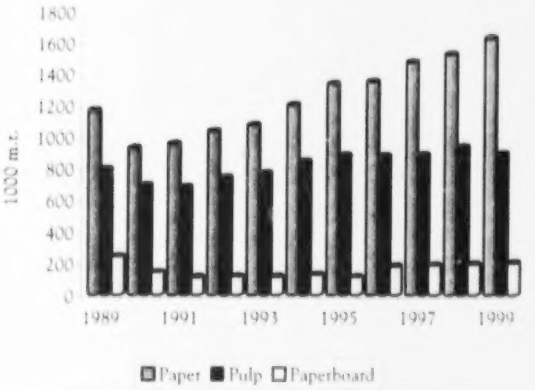
	Unit	*1989*	*1998*	*1999* [a]	*% change 1989-1999*
Sawnwood	1,000 m^3	5,860	5,830	5,650	-3.6
Particle board	1,000 m^3	1,132	2,452	2,620	+131.4
Fibreboard	1,000 m^3	635	975	1,060	+66.9
Plywood	1,000 m^3	112	134	129	+15.2
Pulp	1,000 m.t.	791	934	891	+12.6
Paper	1,000 m.t.	1,405	1,718	1,830	+30.2
Furniture	million $	882	2,594	2,500	+183.0

[a] Estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

GRAPH 4.6.3

Pulp, paper and paperboard production in Poland, 1989-1999



Note: For 1999, estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

4.7 Trade of wood and wood products

The development potential of Polish wood industry has always been and still is directly related to export possibilities. For several years now 70 to 80% of the furniture production has been exported. 15% of sawnwood, 22% of flooring, 22% of particle board, and over 40% of fibreboard are exported. On the other hand, imports play a significant role only in the case of fibrous pulp (29% imported), and paper and paper products (56% imported). Imports as a per cent of domestic production are 14% for furniture, 5% for sawnwood, 7% for particle board and 12% for fibreboard.

In 1989 Poland exported wood products (including furniture and products of pulp and paper industry) worth approximately $395 million, while in 1999 the value of these exports reached $3.7 billion, almost 10 times higher (not adjusted for inflation). The rate of growth of exports of wood products, especially furniture, in the entire 10-year period was greater than the rate of growth for all Polish exports. The year 1998 was exceptional when, in the wake of the crisis in Russia, the growth rate of furniture exports clearly declined.

TABLE 4.6.2

Production of forest industry in Poland, 1991-1999

(Annual % change based on constant prices)

	1991	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*
All manufacturing	-8.0	2.9	96.4	13.1	10.2	8.8	11.2	4.8	4.4
Woodworking industry	-2.6	15.4	3.7	11.7	19.4	3.0	18.1	11.6	15.5
Pulp and paper industry	-3.9	12.0	6.6	26.7	17.7	12.0	16.6	9.1	14.7
Furniture industry	1.3	13.4	12.2	19.9	21.7	23.0	24.3	16.1	8.5 [a]

[a] Estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

TABLE 4.6.3

Wood products consumption in Poland, 1989, 1998, and 1999

	Unit	*1989*	*1998*	*1999* [a]	*% change 1989-1999*
Sawnwood	1,000 m^3	5,590	5,211	5,065	-9.4
Particle board	1,000 m^3	1,168	2,588	2,220	+90.1
Fibreboard	1,000 m^3	589	692	730	+23.9
Plywood	1,000 m^3	140	117	118	-15.7
Pulp	1,000 m.t.	963	1,043	1,110	+15.3
Paper	1,000 m.t.	1,463	2,088	2,240	+53.1
Furniture	million $	750	1,081	1,050	+40.0

[a] Estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

The opening up of borders in 1995 as well as considerable liberalization of foreign trade of wood and wood products stimulated trade. In 1999 Poland exported over twice as much sawnwood, 8 times more particle board, 9 times more paper and paperboard and 12 times more furniture than in 1989 (table 4.7.1).

The main market outlets for Polish products in this period were western European countries. At present, the majority of the trade takes place with the EU member states. In 1999 about 75% of wood products and pulp and paper products as well as over 80% of furniture were sold to the EU countries. At the same time, the EU is an important supplier to the Polish marketplace. Approximately 58% of wood products, 85% of furniture, 48% of pulp, 88% of paper and 81% of paper products come from the EU. Germany is by far the most important trade partner.

In 1999 about 60% of softwood sawnwood experted, 40% of plywood , over 50% of flooring material, 38% of particle boards, 34% of MDF and 58% of furniture were exported to German markets. At the same time, Germany's share of Poland's imports were particle board, including OSB 6%, fibreboard 67%, MDF over 81%, furniture 30%, and paper and paparboard 30%.

4.7.1 *Pulpwood and sawlogs*

Practically speaking all industrial roundwood removals are processed by domestic wood processing plants. According to initial data, the export of industrial wood in 1999 amounted to 395 thousand m^3, i.e. 2% in relation to total removals (graph 4.7.1). On the other hand, Poland imported 570,000 m3 of industrial roundwood, which constitutes slightly more than 2% of production. This trend has remained unchanged for a long time.

Poland exports industrial wood primarily to Austria (32% in 1999) and the Czech Republic (25%) as well as to Denmark (9%), Germany (8%), Italy (8%) and Sweden (7%). The main suppliers of wood raw material to Poland are: Belarus (36%), Lithuania (26%), Ukraine (14%), Germany (12%) and Russia (8%).

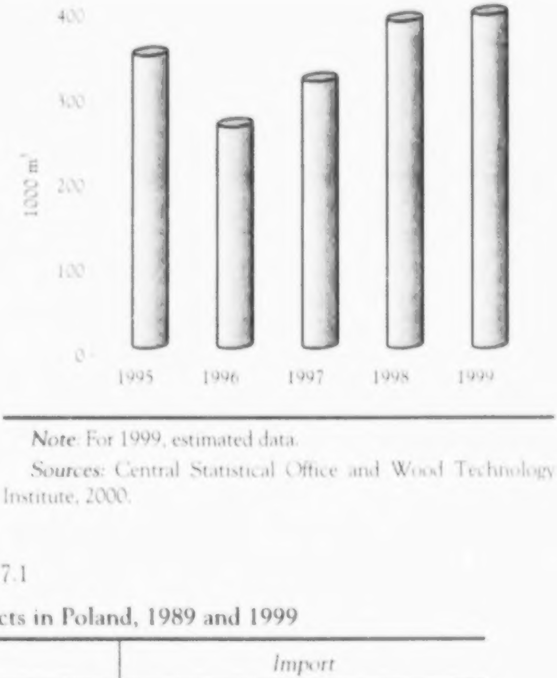
Half of the industrial roundwood exported is sawlogs and 30% is pulpwood. In the case of imports, the proportions are reversed with 68% being pulpwood and only 17% sawlogs.

The last two years witnessed a significant (47%) increase in pulpwood imports resulting from development of the Polish pulp and paper industry and new investments in MDF and OSB production which use this type of wood raw material.

In official statistics MDF is included in fibreboard and OSB is included in particle board, however, their individual importance is growing (tables 4.7.2 and 4.7.3).

GRAPH 4.7.1

Export of industrial roundwood in Poland, 1995-1999



Note: For 1999, estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

TABLE 4.7.1

Exports and imports of wood products in Poland, 1989 and 1999

Products	*Unit*	*Export*			*Import*		
		1989	*1999*[a]	*% change 1989-1999*	*1989*	*1999*[a]	*% change 1989-1999*
Sawnwood	1,000 m^3	386	840	+117.6	119	255	+114.3
Particle board	1,000 m^3	69	580	+740.6	105	180	+71.4
Fibreboard	1,000 m^3	122	455	+273.0	76	125	+64.5
Plywood	1,000 m^3	25	81	+224.0	53	70	+32.1
Pulp	1,000 m.t.	15	41	+173.3	187	260	+39.0
Paper	1,000 m.t.	168	610	+263.1	110	1020	+827.3
Furniture	million $	148	1,850	+1,150.0	29	360	+1,141.0

[a] Estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

Bearing in mind the predicted further increase of the domestic demand for paper, MDF and OSB, it is expected that in 2000 the trend for growing imports of pulpwood will continue, although expressed in absolute figures the quantities will not be very high (approximately 265,000 m^3).

4.7.2 *Sawnwood*

It is estimated that in 1999 Poland exported 840,000 m^3 sawnwood, which was 2% more than in 1998. More than 70% of exports comprise sawn softwood, primarily pine. In 1999 more than 62% of softwood exports and 23% of sawn hardwood was sold on the German market and this situation has remained unchanged for several years now. Other softwood customers include the Netherlands, Denmark and Italy (table 4.7.4). Sawn hardwood is sold also to Italy, Sweden, Denmark and Austria (table 4.7.5). It is forecast that in 2000 the export of sawnwood will reach approximately 1,100,000 m^3.

Imports reached the volume of 255,000 m^3 in 1999, and in comparison with 1998, were 23% higher. Sawnwood is imported by Poland primarily from countries of eastern Europe. In 1999, 46% of sawn softwood came to Poland from Russia (up from 35% in 1998) and 24% from Belarus (up 17% from 1998) (table 4.7.6). Sawn hardwood is imported to Poland mainly from Slovakia and Germany. (table 4.7.7). Imports are expected to increase to the level of 350,000 m^3 in 2000.

TABLE 4.7.2

MDF consumption, production and trade in Poland, 1994-1998

(1,000 m^3)

	Consumption	*Production*	*Exports*	*Imports*
1994	13	15	9	7
1995	63	168	115	10
1996	137	196	100	41
1997	191	246	104	49
1998	348	500	212	60

Source: Wood Technology Institute, 2000.

TABLE 4.7.3

OSB consumption, production and trade in Poland, 1994-1998

(1,000 m^3)

	Consumption	*Production*	*Exports*	*Imports*
1996	22	0	0	22
1997	140	100	39	79
1998	50	170	170	50

Source: Wood Technology Institute, 2000.

TABLE 4.7.4

Sawn softwood exports from Poland, 1999

	Volume (m^3)	*Share (%)*
Germany	341,000	62
Netherlands	49,500	9
Denmark	38,500	7
Italy	38,500	7
Belgium	33,000	6
Other	49,500	9
Total	550,000	100

Source: Wood Technology Institute, 2000.

TABLE 4.7.5

Sawn hardwood exports from Poland, 1999

	Volume (m^3)	*Share (%)*
Italy	92,800	32
Germany	66,700	23
Sweden	20,300	7
Denmark	20,300	7
Austria	20,300	7
Other	69,600	24
Total	290,000	100

Source: Wood Technology Institute, 2000.

TABLE 4.7.6

Sawn softwood imports by Poland, 1999

Source	*Volume (m^3)*	*Share (%)*
Russia	66,700	46
Belarus	34,800	24
Ukraine	11,600	8
Czech Republic	8,700	6
Other	23,200	16
Total	145,000	100

Source: Wood Technology Institute, 2000.

TABLE 4.7.7

Sawn hardwood imports by Poland, 1999

Source	*Volume (m^3)*	*Share (%)*
Slovakia	25,300	23
Germany	23,100	21
Ukraine	14,300	13
Latvia	12,100	11
Belarus	7,700	7
Other	27,500	25
Total	110,000	100

Source: Wood Technology Institute, 2000.

4.7.3 Wood-based panels

Between 1989 and 1999 the export of wood-based panels increased more than five times. In this period, Poland began to produce new kinds of boards, i.e. MDF in 1994 and OSB in 1997, which became quite attractive products to export markets (graph 4.7.2). For example, in 1998 one fourth of the export (216,000 m^3) was MDF. In the same period of time the import of wood-based panels increased by 1.6 times.

The majority of these imports included particle board which was necessary for the dynamically developing furniture industry. In comparison with 1998, exports of wood-based panels increased by 29% in 1999, while imports dropped by nearly a half.

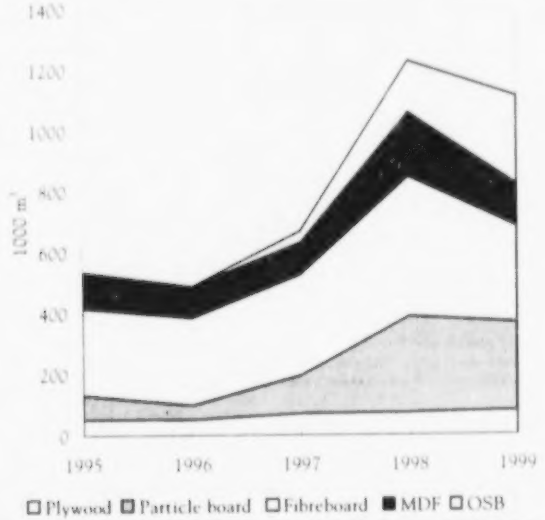
More than 50% of wood-based panels exported from Poland are particle board, including a growing share of OSB.

According to initial data, in 1999 Poland exported 580,000 m3 of particle board (84% more than in 1998), 455,000 m3 fibreboard (the same level as in 1998) and 31,000 m3 of plywood (13% less than in 1998).

Approximately 38% of particle board export is to Germany, 8% to Denmark, 8% to Ukraine, and 6% to Lithuania. The main customers for Polish fibreboard are: Germany 45%, Holland 9%, the Czech Republic 8% and Great Britain 8%. Plywood is exported mainly to Germany 41%, Sweden 13%, and Denmark 10%.

GRAPH 4.7.2

Export of wood-based panels in Poland, 1995-1999



Note: For 1999, estimated data.

Sources: Central Statistical Office and Wood Technology Institute, 2000.

Poland imports wood-based panels primarily from Germany and countries of eastern Europe. In the case of particle board, about 31% is imported from Germany, 27% from Lithuania and 12% from Estonia. For fibreboard, 68% is purchased from Germany and 9% from Belarus. 39% of plywood comes from Russia and 29% from Belarus.

It is expected that in 2000 the export of particle board will increase to 650,000 m3. The export of fibreboard will fluctuate in the range of 460,000 m3, while plywood exports, following increase of domestic demand, will decrease to 83,000 m^3.

4.7.4 Woodpulp and paper

Mean paper and paperboard consumption in Poland is relatively low and amounts to about 55 kilograms per person per year.

In contrast to all wood products there has been, for many years now, a trade deficit in Polish foreign woodpulp and paper trade. In 1999, this surplus was over six times higher in the case of woodpulp and 1.7 times higher – in the case of paper and paperboard. According to initial data, the export of woodpulp in 1999 amounted to 41 thousand tonnes and was 2.7 times higher than in 1989 but 45% lower than in 1998. Paper exports in 1999 reached 610 thousand tonnes and was by 3.6 times higher than ten years ago and by 10% more than in 1998.

Nearly 90% of Polish woodpulp exports are to Germany. Paper and paparboard exports are to Germany, 22%; Italy, 16%; France and Great Britain, 7% each.

Imports of woodpulp in 1999 reached about 260,000 tonnes, 42% more than the previous year. In the period from 1989-1999 imports of paper and paparboard increased by over 9 times to the level of 1.0 million tonnes. Poland exports mainly packaging paper and imports high quality paper and special types of papers.

The main suppliers of woodpulp to the Polish market are: Russia (33%), Finland (19%), Sweden (18%), the United States (14%). Paper is imported from Germany (30%), Finland (21%), Austria and Sweden (10% each).

4.8 Certified forest products

Polish forests were one of the first in Europe to initiate the implementation of international certificates confirming the compliance of management practices with environment protection regulations. The certificates guarantee the conformity of raw materials and processed products with stated origin, hence they should, in theory at least, create a market for certified wood. So far, six out of the existing seventeen Regional Directions of State Forests were awarded certificates within the framework of the Forest Stewardship Council (FSC) certification scheme. Moreover, three wood processing plants were awarded "chain of custody" certificates. This certificate confirms that a given product was obtained from wood harvested in certified forests in compliance with Forest Stewardship Council regulations.

On the basis of available information there is no ground to claim that there is a market of certified wood in Poland. Since 1998 General Direction of State Forests has stopped monitoring the process of certification of domestic customers of wood from certified forests ("chain of custody" certificate), which is why no information is available on the demand for certified wood on domestic market. There are no special prices for certified wood in the system of prices offered by the State Forests. It can, therefore, be said that if there is a market in Poland for certified wood, then it is still a "dormant market".

4.9 Prospects for wood industry

In the wake of the systemic transformations in Polish economy in the years between 1990 and 2000, the importance of the wood industry has increased remarkably as evidenced by the increase in the share of this sector of industry in national income, value of total production sales and a considerable and steadily growing positive foreign trade balance.

Transformations of the Polish wood sector moved faster than in the other branches of Polish economy. However, considerable differences occurred in the process of changes both in individual sectors and in groups of enterprises of this industry. Despite periodic difficulties occurring not only in the demand but also in production, future prospects for the development of the Polish wood industry could be assessed as very promising.

It can be expected that the driving force for development will remain furniture export, however the growth rate will slow. It appears that paper conversion, e.g. box manufacturing and other conversions, is a sector with bright perspectives.

The important factors which will influence further development of the forest and wood industry sector in Poland are the rich domestic raw materials and the low energy prices and labour costs. It can be expected that the above advantages of Polish industry will be further fortified by creating an appropriate business environment to encourage both production and export. This kind of positive economic climate could include:

- stabilization of Polish economy and further improvement in the majority of macro-economic indices;
- development of the housing sector;
- further improvement of demand in the domestic marketplace;
- development of the huge eastern market potential; and
- such popular factors as "return to nature" and construction with ecological materials, especially wood.

Because the Polish society aspires to increase consumption, it can be assumed that the current low level of consumption of basic wood products in comparison with mean European standards will favour an increase of demand for wood products. This, in turn, will promote further development of wood industry. However, per capita national income in Poland, which is several times lower than in western European countries, will prevent the rapid achievement of the consumption level of wood product similar to that of western European countries. All in all, considering the predicted population growth, it can be assumed that Poland may be able to reach per capita consumption indices for most wood products similar to the current ones in western Europe towards the end of the next decade.

Chapter 5

China's Forest Products Markets [1]

Highlights

- China's domestic demand for wood products is growing rapidly due to the rising standard of living of its 1.3 billion people.
- Because of extreme lack of forest resources and strong demand, China now ranks as the world's third-largest importer of forest products, importing nearly one-third of its forest products consumption.
- After the economic reform and opening to the outside world, the production and trade of major forest products has increased considerably and has accelerated with foreign investment.
- For natural forest protection programme, the annual production of roundwood will be halved between 1998 and 2000, and be further reduced by 2003. The shortfall in domestic harvest volume is being replaced by imports.
- Although 5 million hectares are planted per year, the forest land cover is only 17%. A structural shortage is forecast in 2010 when China is expected to import 50% of its forest products demand, of which almost 70% will be from temperate and boreal sources.
- Sawnwood consumption and production rank third in the world.
- Although per capita consumption is less than half the world average, China's production and consumption of paper and paperboard is second only to that of the United States.
- Since 1998, by value, forest products have been the greatest commodity imported by China.
- Sources of softwood log imports have changed from North America to Russia and New Zealand. Hardwood logs still come from the United States, Russia and increasingly from Europe, especially in 2000 following the European windstorm volumes.
- Furniture exports, of which 50% were wooden, more than doubled in value from 1997 to 1999, reaching $2.7 billion. The major destination was the United States.
- Wood-based panels production increased 42% in 1999 from 1998 and plywood imports decreased as a result, by 38% in volume.

---

[1] By: Prof. Kunshan Shi, Director, Institute of Scientific and Technological Information, Chinese Academy of Forestry, Wan Shou Shan, 100091, Beijing, China, Telephone +86 10 6288 3772, Fax +86 10 6288 2317, E-mail: istifsh@public3.bta.net.cn; Prof. Fengming Lin, Vice Director, Tropical Forest Product Information and Consultation Center of China, Chinese Academy of Forestry, Wan Shou Shan, 100091, Beijing, China, Telephone +86 10 6288 3772, Fax +86 10 6288 2317, E-mail: linfengming@isti.forestry.ac.cn; and Mr. Zhisheng Xu, Engineer and Assistant Professor, Institute of Scientific and Technological Information, Chinese Academy of Forestry, Wan Shou Shan, 100091, Beijing, China, Telephone +86 10 6288 9732, Fax +86 10 6288 2317, E-mail: xuzhisheng@hotmail.com

- Paper manufacturing is increasing substantially. Imports of pulp and waste paper rose and paper imports decreased by 23% in 1999.
- A growing volume (5 million m^3 in 1999) of roundwood, both domestic and imported, is used for cultivation of edible fungi.

Secretariat introduction

The secretariat would like to thank the co-authors of this special chapter, Drs. Kunshan Shi and Fengming Lin and Mr. Zhisheng Xu of the Chinese Academy of Forestry in Beijing. Dr. Shi is a Forestry Information Researcher and Director of the Research Institute of Scientific and Technological Information on Forestry and just completed an outlook study on China's forest products markets in 2010 for the ITTO (some preliminary results are presented here). Dr. Lin is a Forest Industry Researcher and Vice Director of the Tropical Forest Product Information and Consultation Center of China. Mr. Xu is an assistant to Dr. Shi and he performed the translation of the text.

The Chinese Academy of Forestry, founded in 1958, is a comprehensive research institution affiliated with the State Forestry Administration. The Academy has 9 research institutes, 4 experimental centres and 3 research and development centres, which are located in 10 provinces. Research interests cover all forestry-related subjects, mechanical and chemical processing of forest products, utilization of forest products, application of new and advanced technologies, biotechnology, remote sensing, geographical information systems, global positioning systems, system engineering and information networks. Over 1,700 academic and technical staff were working at the academy at the beginning of 1998 (Source: http://www.forestry.ac.cn/yjg/yjg.htm)

The secretariat found this information on a fast-emerging forest products consuming nation to be quite enlightening. This chapter is one of a continuing series of special chapters in the Review which features a country's forest products markets, either a trading partner or competitor, from outside the ECE region.

5.1 General socio-economic development

5.1.1 *Population and employment*

By the end of 1999 the total population of China was 1.3 billion, of which 30.9% was living in cities and towns. Annual natural growth is 0.9%. The total number of employed is 705.9 million, of which 10.1 million work in cities and towns. The registered unemployment rate is 3.1%.

5.1.2 *Gross domestic product and people's income*

The GDP in 1999 was nearly $1,000 billion, up 7.1% over the previous year. The per capita disposable income of the country's urban families in 1999 was 5854 yuan ($708), 9.3% higher than the previous year.

The price of goods has decreased in successive years because market demand is insufficient. In 1999, consumer prices decreased by 1.4%, and the total level of retail prices for goods decreased by 3%.

5.1.3 *Exchange rate of the yuan and foreign exchange reserves*

The exchange rate of the yuan remains stable. In 1999, the exchange rate of the yuan to the United States dollar was 8.2793:1, as compared to 8.2794:1 in 1998. Foreign exchange reserves increased steadily reaching $154.7 billion at the end of 1999, compared with $145.0 billion in 1998 and $139.9 billion in 1997.

5.1.4 *International trade*

The total value of trade (import and export) in 1999 was $360.7 billion, up 11.3% over the last year. Of this, the export value was $194.9 billion, the favourable balance of trade was $29.1 billion. The import of forest products in terms of value was $8.0 billion, ranking first place of all commodities.

5.1.5 *Influence of the Asian financial crisis on China's economy*

The Asian financial crisis of 1997 and 1998 had an enormous influence on China's economy, especially on exports. In this crisis, while the currencies of some Asian countries depreciated considerably, China made efforts to maintain the stability of the exchange rate of the yuan. Therefore, China's export commodity prices lacked competitiveness, causing China's export value to drop by 12.9% to Asian nations, (by 4.3% to Japan and 30.2% to Korea) during the first half of 1998, compared with the same period of the previous year. The rate of growth of Chinese exports slid drastically. Total exports increased by only 0.5% over the previous year, and growth rate dropped by 20.4 percentage points compared with the previous year.

5.1.6 *The role of forestry in national economy*

The total production value of forestry in the state-owned institutions in 1998 amounted to around $33.3 billion, representing about 2% of gross national product in China. Total employees in state-owned forestry institutions in 1998 were around 2.3 million. If non State-owned institutions, which are significant, were included, the percentage would be greater.

5.2 Forest resources

5.2.1 *Forest area*

According to the Fifth National Forest Inventory (1994-1998), published in 2000, the total forest area of China[2] accounts for 153.6 million hectares, covering 16.5% of the land area. Per capita forest area is only 0.12ha. Of the total forest area, forest stand amounts to 134.3 million hectares, making up 87.4%; exploitable forest, 20.22 million hectares, representing 13.1%; bamboo forest, 4.21 million hectares, accounting for 2.9%. Of the forest stand area, 50.7% is softwood forest, while hardwood forest accounts for 49.3%.

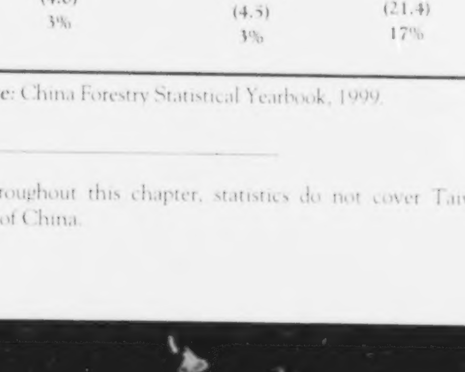
5.2.2 *Growing stock*

The total growing stock is 11.3 billion m³, of which 10.1 billion m³ or 89.2% are forest growing stock, while the balance is the growing stock of open woodland (1.2%), single trees (6.2%) and plantations (3.4%) (graphs 5.2.1 and 5.2.2).

GRAPH 5.2.1

Forest categories in China, 1999

(Million ha)

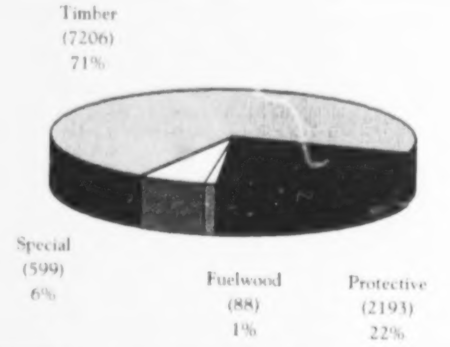


Source: China Forestry Statistical Yearbook, 1999.

GRAPH 5.2.2

Forest growing stock in China by forest categories, 1999

(Million m³)



Source: China Forestry Yearbook, 1999.

5.2.3 *Forest category*

Forest is usually divided into four categories according to its use: commercial timber forest, protective forest, fuelwood forest and special-purpose forest. The commercial timber forests are sources of industrial roundwood and non-wood forest products. Protective forests guard against floods and may be reserved for other purposes. Special-purpose forests are reserves for scientific research and environmental protection.

5.2.4 *Forest ownership*

42% of the total forest area is owned by the State, while 58% is owned collectively. As far as growing stock is concerned, the percentage is 75% and 25% respectively.

5.2.5 *Increment and consumption of the forest resources*

The annual net increment of the forest is 457.5 million cubic meters with a net rate of growth of 3.8%; the annual average net consumption is 370.7 million cubic meters with a net rate of consumption of 3.1%.

---

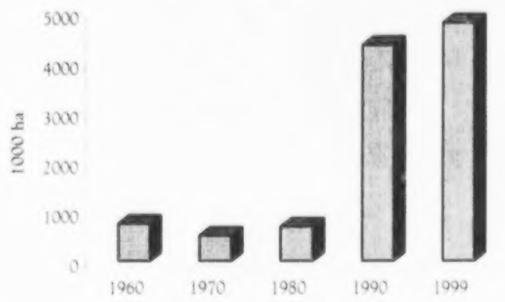
[2] Throughout this chapter, statistics do not cover Taiwan Province of China.

5.2.6 *Plantations*

By the end of 1999, the total area of plantations in China amounted to about 46.6 million hectares, covering 30.4% of the total forest area. However, the growing stock of plantations is only 1.0 billion cubic meters, accounting for less than 10% of the total growing stock. In the last five years, the average annual planting area fell to 4.8 million hectares. Most of the plantations are in the stage of young and middle-aged stands.

GRAPH 5.2.3

Annual planting areas in China, 1960-1999



Source: China Forestry Statistical Yearbook, 1999.

5.2.7 *Nature reserves and forest parks*

As of the end of 1998, the number of nature reserves of China totaled 1,146, with an area of 88.1 million hectares, covering 8.8% of the State's total area. Of all the nature reserves, 137 are classified as national level. There are now 870 forest parks of various levels, with a total area of 7.5 million hectares, representing 0.8% of the total territory of which 292 are national forest parks, with an area of 5.3 million hectares.

5.3 Institutional framework

5.3.1 *Organizational structure of forestry management*

China's forestry institutions are set up at five levels:

- the State Forestry Administration (former Ministry of Forestry) in the central government;
- forestry departments at the provincial level;
- forestry bureaux at the regional level;
- forestry bureaux at the county level; and
- forestry stations at the township level.

5.3.2 *Forest regulations and policies*

The Forest Law of the People's Republic of China, formally promulgated in 1984, is the most important law governing almost every aspect of forestry. With the approval of the State Council the former Ministry of Forestry promulgated the regulations for implementing the Forest Law of the People's Republic of China in 1986. Among other important forestry related laws and regulations are: Law of Water and Soil Conservation of the People's Republic of China; Regulations on the Protection of Terrestrial Wildlife; Provisional Regulations on Forest Management; Urban Greening Regulations; Regulations of the PRC on Nature Reserves; Regulations on Forest Park Management; and the Forestry Action Plan for China's Agenda 21.

In 1981, the Fourth Session of the Fifth National People's Congress adopted the Resolution on National Compulsory Tree Planting Campaign which states that "wherever possible, every Chinese citizen, 11 years old and over, excluding the old, weak, sick and disabled, should plant 3 to 5 trees per year in light of the specific local conditions, or accomplish an equivalent amount of work in seedling production, forest management and protection and other greening activities." By the end of 1998, 30 billion trees had been planted by 6 billion man-hours during the campaign.

Announced in June 2000, a National Plan of Ecological Environmental Construction issued by the State Council and the Tenth Five-year Plan (2001-2005) has set targets for afforestation. China plans to plant 11.5 million hectares of trees by 2005, 23 million hectares by 2010, and 46 million hectares by 2030 to bring the forest coverage to 18.2%, 19.4%, and 24%, respectively.

5.3.3 *Natural forest protection*

To reverse the deterioration of environment in some key areas, such as headwaters of the Yangzi River, Songhuajiang River and Nenjiang River, the Chinese Government decided to put in place the natural forest protection programme in 1998. According to this programme, the annual production of roundwood will be reduced by 12.4 million m^3 or 46% from the year 1998 to 2000 and be further reduced by 3.6 million m^3 in the second phase by the year 2003.

5.4 Analysis and development of production of China's major forest products, 1981 to 1999

After the reform and opening to the outside world, along with rapid and continuous development of national economy, the production of major forest products, including roundwood, sawnwood, panels, pulp, paper and paperboard and furniture, increased considerably. Because of changes in domestic forest resources and market demands, however, the increasing rates of production were significantly different among forest products.

Changes of production of different products over the period from 1981 to 1999 are described below.

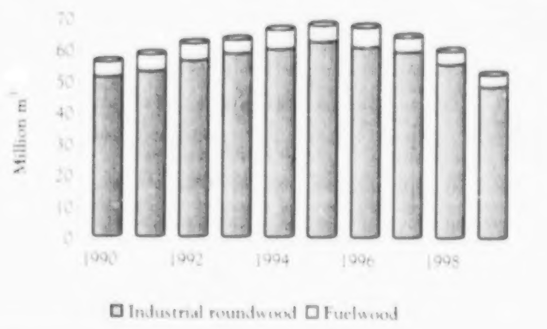
5.4.1 *Changes in roundwood production*

Roundwood production has been continuously declining (graph 5.4.1). The reason for this situation is that the Chinese Government has implemented the Natural Forest Protection Policy in the whole nation and greatly reduced roundwood production.

According to statistics provided by the State Forestry Administration, the total roundwood production in China was 52.3 million m^3 in 1999, 6% higher than in 1981 but 12% less than in 1998. Of the total, the production of industrial roundwood was 48.5 million m^3, 14.1% higher than in 1981 and 12.7% less than in 1998. The production of fuelwood was 3.9 million m^3, 43.9% less and 5.1% higher than in 1981 and 1998 respectively.

GRAPH 5.4.1

Roundwood production in China, 1990-1999



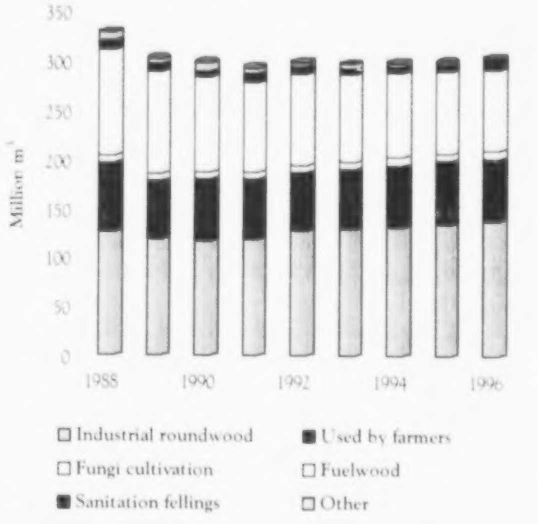
Source: The State Forestry Administration of China, 2000.

Since the official figures of roundwood production in China can not fully reflect the actual situation, experts generally adopted the "method of reverse reckoning" to estimate roundwood production. This method estimates the roundwood production based on the actual consumption of forest resources.

China's consumption statistics of forest resources come mainly from two kinds of surveys of national forest resources. The first is the "Survey of Consumption Volume and Consumption Structure of China's Forest Resources" normally produced each year by Resources Department of the former Ministry of Forestry, which ceased during the last two years. The second survey is the national forest inventory performed every 5 years by the Institute of Forestry Planning and Design under the State Forestry Administration. According to the survey of consumption volume and consumption structure of forest resources, the production of commercial roundwood in 1996 should be 83.9 million m^3. This is based on the conversion rate of 61% between the production of commercial roundwood and its consumption of forest standing volume. The total production of industrial roundwood would be much higher, about 129.3 million m^3, if the roundwood used by farmers and the cultivation[1] sector were included (graph 5.4.2). Substantial volumes of roundwood were lost in sanitation cuttings following floods and fires.

GRAPH 5.4.2

Roundwood utilization in China, 1988-1996



Source: Survey of consumption volume and consumption structure of China's forest resources, 1997.

New statistics indicate that the data of the first survey method are generally lower than the data of the second survey method (forest inventory, implemented every 5 years). It is estimated by experts concerned that the data of the first survey method accounts for only some 86% of the second survey method. According to the national forest resources inventory (1994-1999) completed in 2000, China's average annual net increment of forest trees accounts for 457.5 million m^3. The net consumption of the country's forests was 370.7 million, increased by 50.8 million m^3, compared with the previous inventory stage.

If the consumption of trees around houses, villages, road sides and water courses and canals, and sanitation fellings is not taken into account, the annual national average net consumption of forest resources under the scope of cutting quota management would be some 344 million m^3. This means that the annual national average production of roundwood in 1994-1998 period accounts to some 250 million m^3. When 30% of fuelwood consumption (about 75 million m^3) is subtracted, the production of industrial roundwood is about 175 million m^3.

---

[1] Large volumes of roundwood are used in the cultivation of edible fungi, both as a substrate and also to build necessary structures.

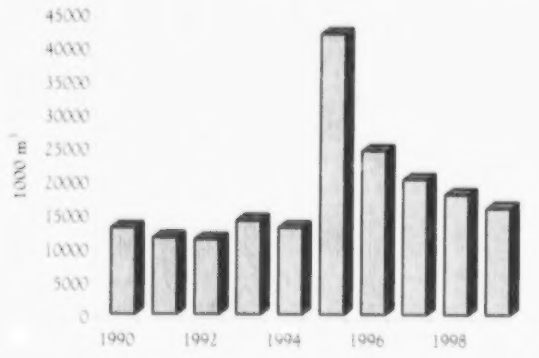
5.4.2 *Production of China's major forest products*

5.4.2.1 Sawnwood

According to the preliminary statistics by the State Administration of China, the production of sawnwood was 15.9 million m^3 [4] in 1999, 21.9% higher than in 1981 and 11.3% less than in the preceding year.

GRAPH 5.4.3

Sawnwood production in China, 1990-1999



Note: 1995 figures were from the third national industrial census, and the statistical scope was incomplete in preceding years; 1998 statistics do not include the production of non-state owned firms with annual production under 5 million Yuan.

Source: China's State Administration of Forestry, 2000.

5.4.2.2 Panels

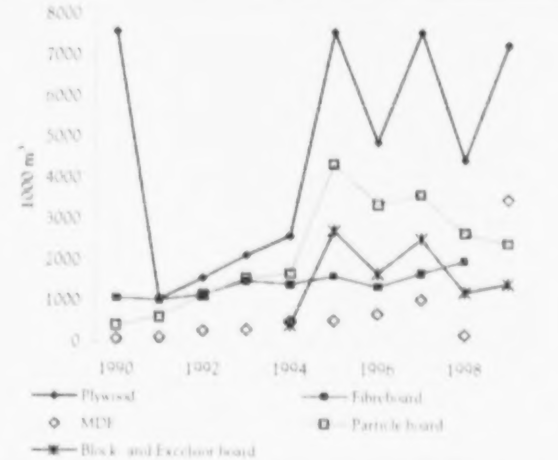
The production of wood-based panels was 15.0 million m^3, 14 times higher than in 1981 and 42.3% higher than in the preceding year (graph 5.4.4). The production of plywood was 7.3 million m^3, 20 times higher than in 1981 and 63% higher than in the preceding year. The production of fibreboard was 3.9 million m^3, 6.8 times higher than in 1981 and 77.9% higher than in the preceding year. The production of particle board was 2.4 million m^3, 31 times higher than in 1981 and 9.4% lower than in the preceding year.

5.4.2.3 Pulp

According to statistics by the State Administration of Light Industry, the production of pulp was 17.2 million m.t. in 1999, 4.2 times higher than in 1981 and 4.3% higher than in the preceding year.

GRAPH 5.4.4

Wood-based panels production in China, 1990-1999



Note: 1995 figures were from the third national industrial census, and the statistical scope was incomplete in preceding years; 1998 statistics do not include the production of non-state owned firms with annual production under 5 million Yuan.

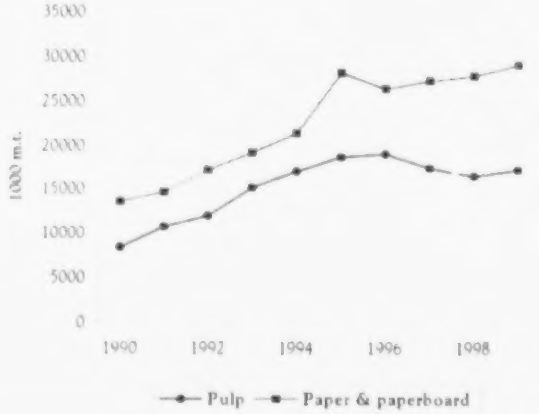
Source: China's State Administration of Forestry, 2000.

5.4.2.4 Paper and paperboard.

The production of paper and paperboard was 29

GRAPH 5.4.5

Production of pulp, paper and paperboard in China, 1990-1999



Note: 90% of pulp is made of straw; 1998 statistics do not include the production of non-state owned firms with annual production under 5 million Yuan.

Source: China's State Administration of Forestry, 2000.

---

[4] Note: the production data of all forest products in 1999 are preliminary estimates.

million m.t., 5.4 times higher than in 1981 and 4.3% higher than in the preceding year (graph 5.4.5).

5.4.2.5 Furniture

The value of furniture production reached $10.5 billion in China in 1998, an increase of 12% over 1997, and further increased to $12.1 billion in 1999, with an increase of 14.9% over 1998 (table 5.4.1).

In the statistics of table 5.4.1, the production of all forest products was substantially higher in 1995 than in the preceding years. However, the production in 1998 was significantly lower than in the preceding year. This does not reflect actual changes of production, but rather these aberrations are due to changes of statistical procedures. Production in 1995 was substantially higher than in the preceding year chiefly because of an incomplete statistical scope in the preceding years. Production in 1998 and 1999 was lower than in the preceding year because of a reduction in the statistical scope, namely because statistics of 1998 and 1999 did not include the production of non-State-owned firms with annual production value under 5 million yuan.

Based on the analysis of continuous growth of China's national economy in recent years and the improvement of standard of living, the production of China's major forest products, except for sawnwood, should be higher than the statistical data for 1997. According to investigations, inadequate statistical systems and large numbers of private enterprises which made false reports on production to avoid taxes were also important factors which damaged the accuracy of statistical data.

Limited by statistical systems and methods, sawnwood production data for past years do not reflect the actual production situation of sawnwood in China. At present, the main problems are that large numbers of sawnwood consumers buy roundwood and process it themselves. In

TABLE 5.4.1

Production of China's major forest products, 1981-1999

(1,000 m^3)

Year	*Sawn wood*	*Wood-based panels*						*Pulp*[3] *(1,000 m.t.)*	*Paper & paper board (1,000 m.t.)*	*Furniture*[7] *(1,000 pieces)*
		Total	*Ply wood*	*Fibreboard*		*Particle board*	*Other wood-based panels*[2]			
				Total	*MDF*					
1981	13,010	996	351	568	-	77	-	4,060	5,400	
1985	15,910	1,615	5,390	950	50	182	-	6,150	9,110	116,410
1990	12,850	2,359	7,590	1,172	87	428	-	8,350	13,720	163,720
1991	11,420	2,842	1,054	1,174	137	614	-	10,750	14,790	214,380
1992	11,190	4,167	1,565	1,445	286	1,159	-	11,990	17,250	216,500
1993	14,010	5,505	2,125	1,810	310	1,571	-	15,290	19,140	308,670
1994	12,940	6,647	2,606	1,930	500	1,682	429	17,050	21,380	505,140
1995[1]	41,840	16,846	7,593	2,164	537	4,351	2,738	18,620	28,120	618,650
1996	24,420	12,032	4,903	2,055	695	3,383	1,692	19,036	26,380	501,640
1997	20,120	16,484	7,585	2,759	1,059	3,604	2,537	17,366	27,330	438,940
1998[5,6]	17,880	10,563	4,465	2,195	2,000	2,663	1,240	16,520	27,800	87,006
1999[6]	15,860	15,031	7,276	3,906	3,500	2,410	1,439	17,230	29,000	100,006

[1] Figures in 1995 were from the third national industrial census. The chief reason for substantially higher production of sawnwood and wood-based panels than the preceding years was an incomplete statistical scope in preceding years, which did not include small manufacturers.

[2] Blockboard and excelsior board.

[3] Total pulp. Woodpulp accounts for only 10% as pulp is mainly made from straw.

[4] Of which wooden furniture accounts for 329.6 million pieces, 75% of total volume.

1998 Statistics do not include the production of non State-owned firms with annual production value under 5 million yuan.

[6] The statistical data of furniture in 1998 and 1999 were production value in billion yuan.

[7] Wood and non-wood furniture combined.

Source: China's State Administration of Forestry, 2000.

addition, enterprises operated by local people process roundwood and then use the sawnwood, which results in production not counted into China's total production of sawnwood.

5.5 Development of China's forest product trade from 1981 to 1999

5.5.1 *Main characteristics of trade*

China's forest product trade expanded and developed along with implementing the policy of reform and opening-up. China's forest products trade has always been small in volume and formerly the trade partners were limited to the Soviet Union and some countries in Eastern Europe. China's forest products trade over the past twenty years shows that forest product trade has played a very important role in national economic development and in satisfying people's living needs. The forest product trade has the following obvious characteristics.

5.5.1.1 *Trade focussed on imports*

Because of China's extreme lack of forest resources, with average standing timber volume of only 8.6 m^3 per capita (only 14% of the average world level), the forest products trade is mainly unilateral import trade with little export. In 1998, for example, the import volume of six chief categories, namely roundwood, sawnwood, plywood, veneer, pulp and waste paper, and paper and paperboard, reached \$6.3 billion, while the export volume of these same products reached only \$335 million, equivalent to only 5.3% of the import volume.

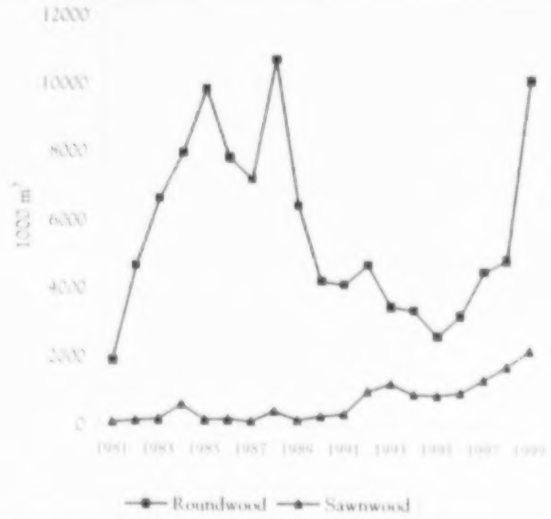
China's imports of forest products over the last 2 decades have expanded dramatically. Reduced domestic harvests combined with greater and greater production capacity have led to an explosion of roundwood imports, more than doubling in 1999 to over 10 million m^3 (graphs 5.5.1 and 5.5.2).

Sawnwood imports also expanded over the last two decades and accelerated in the last two years (graphs 5.5.1 and 5.5.2). Plywood manufacturing capacity is increasing, partly through foreign investments necessitating higher veneer log imports but reducing plywood imports. Plywood imports have fell back in 1999 to a level of 10 years ago (graphs 5.5.3 and 5.5.4).

Paper manufacturing capacity is also increasing, again due to joint ventures and foreign investment, and imports of pulp and waste paper for pulping doubled from 1997 to 1999 (graphs 5.5.5 and 5.5.6). Despite increased manufacturing, the skyrocketing demand for paper products has resulted in growing imports of paper and paperboard.

GRAPH 5.5.1

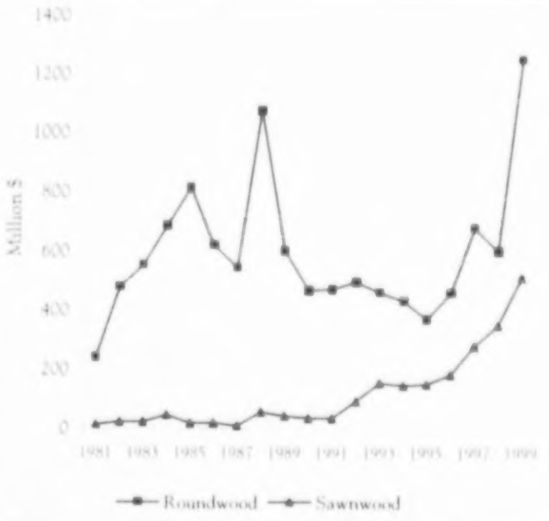
China's roundwood and sawnwood imports by volume, 1981-1999



Source: *Chinese Customs, 1999.*

GRAPH 5.5.2

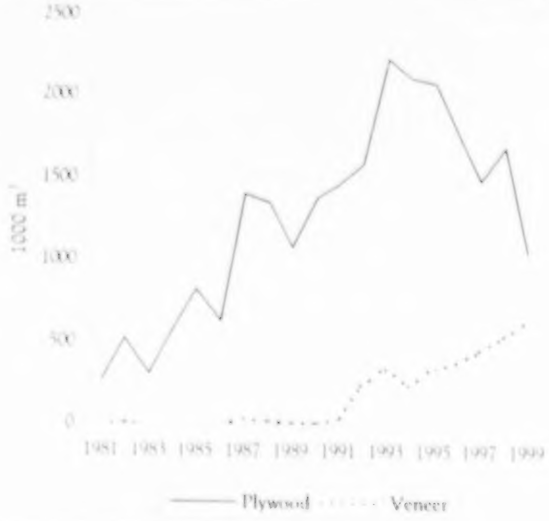
China's roundwood and sawnwood imports by value, 1981-1999



Source: Chinese Customs, 1999.

GRAPH 5.5.3

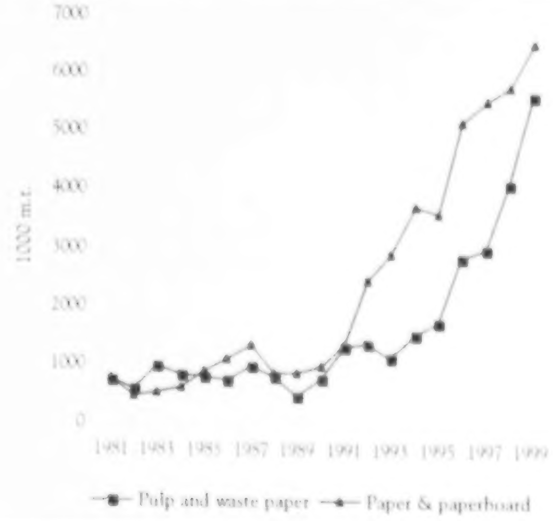
China's imports of plywood and veneer by volume, 1981-1999



Source: Chinese Customs, 2000.

GRAPH 5.5.5

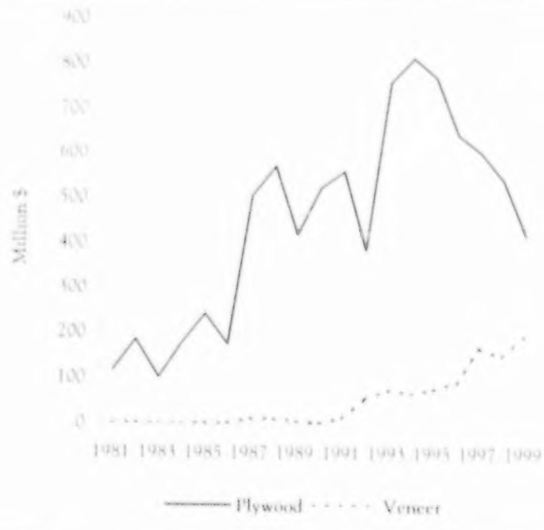
China's imports of pulp, waste paper and paperboard by volume, 1981-1999



Source: Chinese Customs, 2000.

GRAPH 5.5.4

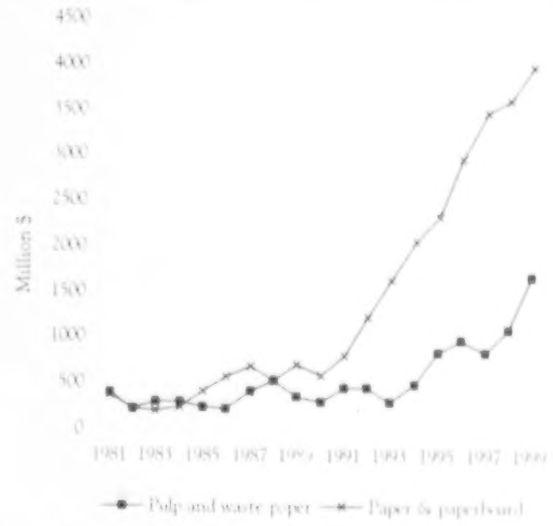
China's imports of plywood and veneer by value, 1981-1999



Source: Chinese Customs, 2000.

GRAPH 5.5.6

China's imports of pulp, waste paper and paperboard by value, 1981-1999



Source: Chinese Customs, 2000.

5.5.1.2 Import value of forest products ranks first among all of China's commodities imported

During the period 1981-1992, China had a total cumulative import of $22.05 billion of forest products representing 2.5% of total value of commodity imports. If calculated according to the value of commodity imports, forest products imports ranked fourth, the first three being steel products, grain and chemical fertilizers. However, over the last few years, with the changes of domestic resources and market demands, the structure of commodity imports has changed tremendously. In 1999, forest products took the first place among the various import commodities (table 5.5.1).

Along with the rapid increase of forest product imports, their proportion to the import volume of all commodities also increased greatly. For example, during the period 1981-1992, the average share of all imports amounted to only some 2.5%, but in the years 1996 and 1997, it had increased to 3.8% and 4.2% respectively, and it further elevated to 4.5% in 1998. In 1998, if all forest products imported were converted into roundwood, the total import volume exceeded 50 million m^3, equivalent to about one quarter of the total consumption of China's industrial roundwood.

5.5.1.3 Structure of forest products imports

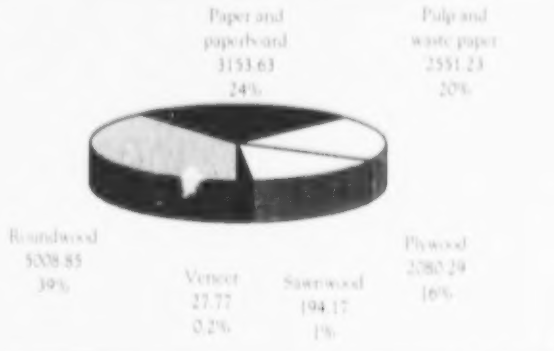
During the period 1981-1988, China's forest products imports were mainly roundwood, the accumulated import value in 8 years was about $5 billion, representing 38.5% of total import value of forest products in the same period ($13 billion) (graph 5.5.7). Total value of forest products imports rose from $1.1 billion in 1981 to $2.8 billion in 1988 to $8 billion in 1999.

Over the last several years, due to the increasing number of countries restricting export of roundwood, prices of roundwood are rising continuously. In addition, the demand structure in China's market has changed and the structure of imported forest products in China also changed correspondingly. By 1998, paper and paperboard took the first place (56.8%) in the total import volume of forest products. Next were pulp and waste paper, roundwood, sawnwood, plywood and veneer respectively (graph 5.5.8).

GRAPH 5.5.7

China's major forest product imports cumulative, 1981-1988

($ million, %)



Source: Chinese Customs, 2000.

TABLE 5.5.1

Volume, value and ranking of major commodity imports in China, 1997-1999

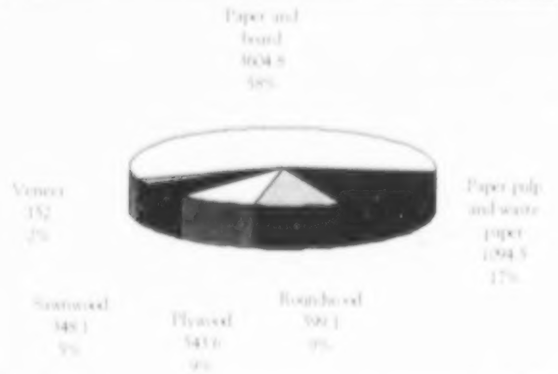
	1997			*1998*			*1999*		
Commodity	*Volume*	*Value $ million*	*Value ranking*	*Volume*	*Value $ million*	*Value ranking*	*Volume*	*Value $ million*	*Value ranking*
Forest products, total	16,927	6,030	3	14,358	6,340	1	26,134	8,030	1
Crude oil (1000 ton)	59,260	9,140	1	49,060	5,680	3	57,430	7,340	2
Steel products (1000 ton)	13,230	6,520	2	12,420	6,290	2	14,860	7,010	3
Aircraft (unit)	73	2,580	5	81	2,600	4	74	2,320	4
Fertilizers (1000 ton)	16,490	2,990	4	13,850	2,510	5	13,350	2,250	5
Total imports		142,360			140,170			165,720	

Source: China's Customs, 2000.

GRAPH 5.5.8

China's major forest product imports in 1998

($ million, %)



Source: Chinese Customs, 2000.

5.5.1.4 *The international position of China's import trade of forest products increases gradually*

According to FAO's statistics, the import volume of industrial roundwood in China (including Taiwan Province of China and excluding Hong Kong SAR, similarly hereafter) in 1997 reached 8.9 million m³, (in which the import volume of Taiwan Province was about 1.8 million m³, according to ITTO), ranking third in the world, just behind Japan and Korea. The import volume of wood panels reached 6.5 million m³ (in which the import volume of plywood in Taiwan Province was about 997 thousand m³, ITTO), ranking third in the world, just behind the United States and Japan. The import volume of paper and paperboard was about 10.5 million m.t. (in which the import volume of Taiwan Province was 4.5 million ton, PPI), ranking second in the world, just behind the United States. The import volume of waste paper reached 3.4 million tons, ranking first in the world; the import volume of wood pulp was 2.5 million tons, ranking fifth in the world. In China, the import value of forest products increased from $4.5 billion in 1991 (seventh place) to $12.4 billion in 1997 ranking it third in the world behind the United States and Japan. Worldwide, the percentage of China's import value of forest products in the global import volume of forest products increased from 4.2% in 1991 to 8.6% in 1997 (table 5.5.2).

5.5.1.5 *China imports forest products from more countries and regions*

(i) Imports of temperate forest products

Roundwood. In the past, most softwood roundwood, mainly Douglas fir and hemlock, was imported from the United States. From 1988 to 1989, for example, the share of softwood roundwood imported from the United States, was 62% in the total import volume. However, because United States roundwood became expensive, softwood roundwood imports increased rapidly from Russia, Korea, Canada (mainly hemlock), and New Zealand (mainly radiata pine). Now Russia supplies the greatest amount of roundwood, mainly Korean pine, Mongolian Scots pine, and a small amount of hardwood roundwood (table 5.5.3). China imported a small amount of temperate hardwood roundwood, which included ash and xylosma from Russia, maple, cherry and oak from the United

TABLE 5.5.2

China's import value of forest products and the changes of its precedence in global imports of forest products in 1991 and 1997

Country	*Total import value ($ billion)*		*Percentage (%)*		*Ranking*	
	1991	*1997*	*1991*	*1997*	*1991*	*1997*
United States	12.9	24.0	12	16.6	1	1
Japan	12.6	17.2	11.8	11.9	2	2
China	4.5	12.4	4.2	8.6	7	3
Germany	12.6	12.0	11.8	8.3	3	4
United Kingdom	9.0	10.0	8.4	6.9	4	5
Italy	6.4	6.8	6.0	4.7	5	6
France	5.8	5.3	5.4	3.7	6	7
World	107.3	144.3	100.0	100.0		

Note: If the import value of Taiwan Province of China, which was $2.7 billion, was excluded from the total value of China, China's total import value of forest products in 1997 would rank fifth in the world.

Source: FAO, 1998.

TABLE 5.5.3

China's roundwood import sources, 1996-1998

(1,000 m³)

Country	1996			1997			1998		
	Imports (1,000 m³)	*Share (%)*	*Ranking*	*Imports (1,000 m³)*	*Share (%)*	*Ranking*	*Imports (1,000 m³)*	*Share (%)*	*Ranking*
Russia	529	16.6	3	949	21.2	2	1,578	32.8	1
Malaysia	554	17.4	2	733	16.4	3	1,061	22.1	2
Gabon	695	21.8	1	1,024	22.9	1	593	12.3	3
Cameroon	62	1.9	8	320	7.2	5	234	4.9	4
Korea D.P.R	275	8.6	5	356	8.0	4	219	4.5	5
Equatorial Guinea	75	2.3	7	228	5.1	6	202	4.2	6
Papua New Guinea	152	4.8	6	183	4.1	8	185	3.8	7
Myanmar	455	14.3	4	206	4.6	7	182	3.8	8

Source: Chinese Customs, 1999.

States, and beech from Europe (mainly Germany).

Pulp, and paper and paperboard. These products used to be imported mainly from Canada and the United States, and secondly from northern Europe. Because of lower prices, imports from Russia and Chile increased vigorously recently. Imports of bleached sulphate softwood pulp and bleached sulphate hardwood pulp from Russia now exceed that from Canada and the United States.

Sawnwood. China imports relatively small amounts of temperate sawnwood, which is mainly softwood from New Zealand and Russia, and hardwoods from the United States and Canada.

(ii) Imports of tropical forest products

Roundwood. Malaysia has been China's principal source of roundwood for many years, but because of the increasing prices, the import volume of roundwood from western Africa (mainly Gabon) increased vigorously in recent years. From 1996 to 1997, for example, the import volume of roundwood (mainly okoume) was always ranked first among all imported roundwood in China. After the financial crisis in south-eastern Asia, the prices of roundwood imported from Malaysia declined rapidly, and then in 1998 Malaysia became the main source of tropical roundwood again (table 5.5.3).

Sawnwood. China imports tropical sawnwood mainly from Malaysia and Indonesia. In 1998, for example, the import share from Malaysia was 48.3%, and from Indonesia was 38%.

Plywood and veneer. China imports plywood and veneer mainly from tropical countries. Indonesia and Malaysia have been the major exporters of plywood to China for many years. In 1998, the import volume of plywood from both countries together was 94% of China's total (tropical and non-tropical) plywood import volume, and 99.2% in China's total import volume for tropical plywood. Indonesia had a 57.3% market share and Malaysia had a 41.8% share. In 1998, China imported veneer mainly from Malaysia (64.6%) and Cambodia (28.3%), a small amount from the Philippines (3.8%) and Indonesia (3.1%).

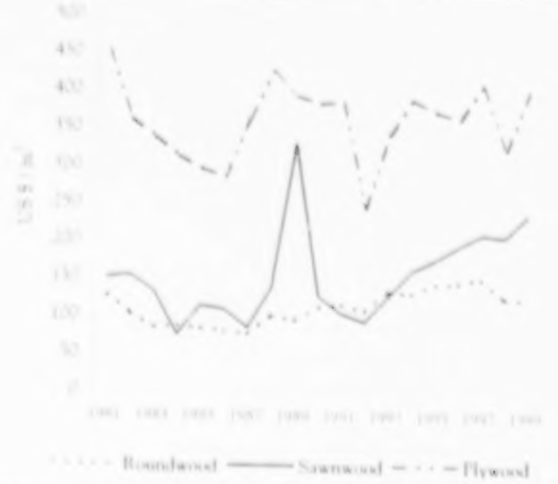
5.5.1.6 Import prices of roundwood and plywood declined significantly under the impact of the financial crisis in Asia

Since the beginning of the 1990s, the average prices of roundwood, sawnwood and plywood have shown an increasing trend in China. However, as a result of the financial crisis in southeastern Asia, the import prices of roundwood and plywood have declined significantly since 1998. This was because the economy and the timber demand declined from other main tropical importers, i.e. Japan and Korea.

The prices of roundwood and plywood decreased by 18.1% and 20.9% over 1997 respectively. However, the sawnwood price decreased only slightly mainly because tropical sawnwood took only a small proportion in total sawnwood. After 1999, along with the rapid economic rehabilitation of southeastern Asian countries, timber demand increased in Japan and Korea, and the prices of plywood and sawnwood rebounded and increased by 24.1% and 14.4% over 1998 respectively. The overall import price of roundwood in 1999, hardwood and softwood combined, remained lower than in 1998, because large quantities of Russian roundwood were imported. The roundwood price was much lower than for tropical roundwood (graph 5.5.9).

GRAPH 5.5.9

Prices of roundwood, sawnwood and plywood, 1981-1999



Source: Chinese Customs, 2000.

5.5.1.7 *Export structure of forest products is being optimized and furniture has become the most important export*

For a long period of time, non-timber forest products (such as fruit, chestnuts, and rubber) and rosin products were China's chief forest products export. The import volume of processed timber products was relatively small and included mainly primary products such as wood chips, sawnwood, chopsticks and toothpicks. Over the last several years, with the development of the forest products industry and the steady increase of foreign investment, exports of high value-added products such as furniture, paper and paperboard have been increasing steadily, with the export structure being continuously optimized (tables 5.5.4 and 5.5.5).

We can see from table 5.5.5 that the export value of paper and paperboard accounted for 40.1% in the total exports of forest products by China by 1996, and furniture took 34.8%. By 1998, the export value of furniture increased rapidly to $ 2.2 billion[5] far ahead of other commodities, which percentage in total export volume increased to 63.8%. Paper and paperboard decreased to the second place, making 28.8% in the total export value of forest products, but was ahead of other forest products in export value.

5.6 China's forests product trade in 1999

5.6.1 *Forest products imports*

In 1999, the total import value of the six chief categories of forest products reached $8.02 billion in China, which was 26.5% higher than in the preceding year, the second highest total so far recorded. Specific analysis for each category of forest products follows, according to the statistical data newly published by Chinese Customs.

TABLE 5.5.4

China's forest products exports (volume), 1995-1999

	1995	*1996*	*1997*	*1998*	*1998*	*% Change 1998-1999*
Roundwood (1,000 m³)	97	64	63	32	23	-28
Wood chips (1,000 m.t.)	1,908	1,849	1,948	1,948	1,601	-18
Sawnwood (1,000 m³)	408	383	388	258	355	+38
Plywood (1,000 m³)	129	177	438	177	423	+139
Veneer (1,000 m.t.)	21	20	31	45	36	+16
Particle board (1,000 m.t.)	5	0.7	11	11	11	0
Fibreboard (1,000 m.t.)	44	3.9	26	14	13	-50
Wood pulp (1,000 m.t.)	27	1.7	13	20	5.7	-71
Waste paper (1,000 m.t.)	16	0.5	4	8	5	-37
Paper & paperboard (1,000 m.t.)	530	799	974	942	897	-5

Source: Chinese Customs, 1999.

---

[5] Note: When sitting facilities were excluded, the export value of furniture was $1.4 billion in 1998, taking 40.9% in the total export value of forest products in the same year.

TABLE 5.5.5

China's forest products exports (value), 1995-1999

($ 1,000)

	1995	*1996*	*1997*	*1998*	*1999*	*% Change 1998-1999*
Roundwood	47,153	29,373	29,455	12,459	8,007	-36
Wood chips	174,000	162,816	154,370	154,471	111,837	-28
Sawnwood	195,000	193,845	193,049	114,892	139,375	+21
Plywood	39,070	62,286	151,536	64,960	123,648	+90
Veneer	28,013	27,436	43,097	41,550	46,431	+12
Particle board	2,798	4,696	9,271	4,727	6,854	+45
Fibreboard	12,881	11,081	9,146	5,983	5,339	-11
Wood pulp	17,473	11,345	6,161	8,997	3,032	-66
Waste paper	1,702	460	311	1,000	410	-59
Paper & paperboard		807,066	1000,672	90,791	924,784	-7
Furniture [1]		700,372	1,295,278	2,190,163	2,707,814	+24

[1] Furniture included seats and other furniture. If the seats were not included, the export value of furniture in 1998 was about $1.4 billion. China's total furniture imports in the same year was about $92.7 million; if the seats were not included, it was $31.7 million. In exported furniture, wooden furniture accounted for about 50%.

Source: Chinese Customs, 1999.

5.6.1.1 *Import volume of roundwood doubled and redoubled*

China imported 10.14 million m^3 of roundwood in 1999 worth $1.25 billion, more than double the 1998 figure in volume and value. Of all imported roundwood, tropical roundwood was 4.91 million m^3, accounting for 48.4%, with an increase of 90.4% over 1998. The import value of tropical roundwood was $755.53 million, representing 60.5% of the total roundwood import value.

5.6.1.2 *Import volume of plywood decreased considerably*

The total plywood import volume and value of China in 1999 was 1.04 million m^3 ($415.9 million) decreasing by 38.4% and 23.5% respectively. China's production of plywood is increasing, necessitating greater veneer log imports (not all increases in capacity and production are currently reflected in official statistics). The main import sources for plywood were Indonesia and Malaysia. The plywood imports from these countries were 588,432 m^3 and 331,316 m^3 respectively, accounting for 56.4% and 31.8% of the total. Compared with 1998, the imports from Indonesia were down 56.5%, and from Malaysia, down 50.5%.

5.6.1.3 *Imports of tropical sawnwood increased considerably*

The import volume of sawnwood in 1999 was 2.18 million m^3, increasing by about 28% in 1997 and 1998. Its total import value was $513 million, increasing by 47.4% over 1998. Of all imported sawnwood, tropical was 1.29 million m^3, accounting for 59.1%, up 65.8% over 1998. Its increase was much more than that in 1997-1998 (17.6%). The total import value of tropical sawnwood was $321.54 million, accounting for 62.7% of the total sawnwood import, increasing by 96.3% over 1998.

The veneer import of China in 1999 was 641,293 m^3, which was up 19.6% over 1998, a bit higher than that from 1997 to 1998 (18.1%). The total import value of veneer was $204.98 million, increasing by 34.8% over 1998. Of all veneer import, 95.9% were from tropical countries with 615,244 m^3. The total import value of tropical veneer reached $184.85 million, accounting for 90.2% of the total veneer import.

5.6.1.4 *Characteristics of imports*

In 1999, China imported 3.1 million tons of pulp, which was 40.9% higher than in the preceding year; imported 2.52 million ton of waste paper, which was 92.5% higher than in the preceding year; and cost $1.66 billion for both pulp and waste paper, which was 51.6% higher than in the preceding year. 6.52 million tons of paper and paperboard were imported, which was 12.9% higher than in the preceding year; and $3.98 billion was cost, which was 10.8% higher than in the preceding year. However, the import volume of paper products decreased from 507.4 thousand tons in the preceding year to 390.1 thousand tons, with a decrease of 23.1%. Paper manufacturing capacity has increased substantially in recent years and further increases are expected.

The above-mentioned conditions indicated the improvement in the structure of China's forest product import, which was mainly shown in the following aspects: First, the import volumes of roundwood and waste paper, which are raw material commodities, rose sharply, by 110.2% and 92.6% respectively, while the rate of growth in 1997 and 1998 was only 7.9% and 18.3% respectively.

Second, the imports of plywood and paper product, which are finished commodities, decreased greatly by 38.4% and 23.1% respectively. This case rarely took place before in China's importing history.

Third, the increasing rates of imports of semi-finished products such as sawnwood, veneer, paper and paperboard maintained normally, which were the same as that in 1998 (the increasing rates for paper and paperboard were 12.9% in 1999 and 4.5% in 1998).

In 1999, the imports of roundwood and waste paper increased rapidly, while that of plywood and paper products decreased sharply. Reasons for this situation are summed up as follows:

The Natural Forest Protection Programme launched by the central government increased the shortage of large diameter roundwood for the domestic markets. The conflicts between supply and demand were aggravated especially with respect to roundwood for piywood, roundwood for sawnwood, roundwood for interior housing decoration, and roundwood for furniture.

After the Chinese government implemented new import tariffs on roundwood (0%), sawnwood (0%), plywood (15%), veneer (5-15%) and paper (12-20%), and relaxed restrictions on the companies engaging in timber import, economic interest drove a large number of enterprises and individuals which had never engaged in timber trade to rush into the field of timber circulation. This was a main reason for blind importing, disordered competition, and suddenly overstocked timber at ports.

China expressed a serious shortage of domestic wood pulp, and had to import partial foreign wood pulp to satisfy the needs of domestic markets for wood pulp. This trend of trade would continue further.

Domestic plywood enterprises could use low-price imported roundwood to produce plywood which were competitive with foreign plywood in both price and quality.

Along with the economic recovery of major plywood importing countries, such as Japan and Korea, and the increase of plywood demand, prices of plywood from south Asia, rebounded considerably. The average price C.I.F of plywood in China, for example, increased from \$321/m^3 in 1998 to \$400/m^3 in 1999, an increase of 24%.

5.6.2 *Forest product exports*

In 1999, China exported a total of \$1.36 billion of the six chief categories of forest products, (i.e. roundwood, sawnwood, plywood, veneer, pulp, waste paper, and paper and paper products), which increased by 10% over 1998. However, when exports of furniture and wood chips were included, the total export value reached \$4.19 billion, which increased by 17.2% over 1998. The export value of furniture reached \$2.7 billion, which increased by 23.7% over 1998, which percentage in the total export value increased from 61.2% to 64.6%. In the meantime, exports

TABLE 5.6.1

China's forest product exports, 1999

Commodity	*Volume*	*% Change 1998-1999*	*Value (\$ 1,000)*	*% Change 1998-1999*
Roundwood (1,000 m^3)	23.0	-28.1	8007	-35.7
Wood chips (1,000 m.t.)	1,601	-17.8	111,837	-27.6
Sawnwood (1,000 m^3)	355	37.6	139,375	21.3
Plywood (1,000 m^3)	423	139.0	123,648	90.3
Veneer (1,000 m.t.)	36	16.1	46,431	11.7
Particle board (1,000 m.t.)	11	0	6,854	45.0
Fibreboard (1,000 m.t.)	13	-50	5,339	-10.8
Wood pulp (1,000 m.t.)	5.7	-71.2	3,032	-66.3
Waste paper (1,000 m.t.)	5	-37.5	410	-59.0
Paper & paperboard [1] (1,000 m.t.)	897	-4.8	924,784	-6.7
Furniture [2]	N.A.	N.A.	2,707,814	23.6
Total			4,189,367	17.2

[1] Values for paper and paperboard were estimated according to average import price of the same year; paper products were included (the same below);

[2] Including seating and other furniture and components. Total export value of furniture, excluding seating, was \$1.7 billion, of which, \$784 million was exported to the United States. In exported furniture, wooden furniture accounted for about 60.7%.

Source: Chinese Customs, 2000.

of pulp, waste paper, paper and paperboard all declined, especially pulp (-65.2%) (table 5.6.1). Nevertheless, exports of paper and paperboard still took a percentage as high as 22.1% in the total export value of forest products.

Over the last two or three years, furniture exports have developed rapidly, owing to large quantities of foreign funds invested in China. Almost all furniture enterprises in Hong Kong have transferred to the mainland of China, while furniture manufacturers in Taiwan and Singapore have also begun to transfer to the mainland of China because of the high costs of labour and land in their original places. These foreign enterprises concentrated mainly in the provinces of Guangdong, Jiangsu and Fujian, and used imported wood to produce finished or semi-finished products to export.

China exported furniture mainly to the United States. In 1999, for example, China exported $1.654 billion of furniture (excluding chairs), of which the export value to the United States was $784 million (47.4% of the total).

China exported wood chips mainly to Japan, and a small amount of wood chips to Korea and Taiwan.

5.7 Consumption of major forest products, with international comparisons

5.7.1 Consumption of industrial roundwood

Section 4.1 reported China's roundwood production. Since official statistical production cannot reflect fully China's actual situations of roundwood production, we calculated the country's production of industrial roundwood according to the consumption structure of forest resources. The production of China's industrial roundwood obtained by this method is estimated at about 156.5 million m^3 each year in the 1994-1998 period.

In 1998, China imported 10.14 million m^3 of roundwood, 2.18 million m^3 of sawnwood, 1.04 million m^3 of plywood, 641,293 m^3 of veneer, 5.61 million tons of pulp and waste paper and 6.52 million tons of paper and paperboard. If the above-mentioned commodities are converted to roundwood equivalent[6], then China imported in 1999 an equivalent of 71.68 million m^3 of industrial roundwood. Thus, China's actual consumption of industrial roundwood in 1999 was approximately 228.18 million m^3 with average per capita consumption of 0.18 m^3, and imported roundwood accounting for about 31.4% of the country's total consumption of industrial roundwood.

According to FAO statistics, the global top 5 consuming countries of industrial roundwood in 1997 were the United States, Canada, China, Brazil and Japan, China's consumption of industrial roundwood was only 113.88 million m^3 in 1997. Obviously, FAO's statistical figures were similar to what we estimated. Even according to our estimation, China's per capita consumption of industrial roundwood is behind both that of these industrial countries and the world average level.

5.7.2 Consumption of sawnwood

Reported production[7] of China's sawnwood in 1999 was 15.86 million m^3, and the import volume of sawnwood was 2.18 million m^3. The actual consumption of sawnwood for this year was 17.68 million m^3, with an annual sawnwood consumption of 0.014 m^3 per capita, after deducting exports of 355,000 m^3. Imported sawnwood accounted for 12.3% of total consumption of sawnwood.

According to estimation by FAO, China's production and consumption of sawnwood was 30 and 27.14 million m^3 respectively, ranking the third in the world, just behind the United States and Japan.

5.7.3 Consumption of wood-based panels

China's statistics on wood-based panels in 1998 changed in scope (not including the production of non State-owned firms with annual production value under 5 million yuan). China's total production of wood-based panels in 1999, 15.03 million m^3, decreased by 8.8% compared to in 1997. Imports of wood-based panels (including plywood, veneer, particleboard and fibreboard) in the same year was 2.09 million m^3, the actual consumption in 1999 was about 16.68 million m^3 after deducting 447,000 m^3 of total exports of the three above-mentioned three categories. Annual consumption of wood-based panels per capita was about 0.013 m^3. In the same year, imports accounted for 12.6% of the country's actual consumption of wood-based panels.

According to FAO's statistics, China's consumption of wood-based panels in 1997 was 19.15 million m^3, ranking second in the world, only behind the United States.

---

[6] The conversion factors used here are: 70% for sawnwood, 50% for plywood and veneer, 1:4 for pulp and 1:5 for paper and paperboard.

[7] Sawnwood production is very decentralized in China, and many sawnwood users buy roundwood and process it themselves. Therefore, it is difficult to give complete statistics for China. The national sawnwood production officially published by relevant department over the years is considerably lower than the actual production.

5.7.4 *Consumption of paper and paperboard*

According to the statistics of China State Light Industry Bureau, the country's production of paper and paperboard in 1999 was 29 million tons, paper and paperboard imports in the same year were 6.52 million tons, and the actual consumption was 35.52 million tons after deducing exports of 897 thousand tons, ranking second in the world. Imports accounted for about 18.4% of total consumption. Annual consumption of paper and paperboard per capita was 28 kilograms, accounting for only 56% of the average consumption (50 kilograms per capita each year, 1997) in the whole world.

FAO statistics showed that China's consumption of paper and paperboard was 38.98 million m^3, ranking the second in the word, behind the United States. However, the annual consumption per capita was only 31 kilograms, accounting for 62% of the world's average per capita consumption (50 kilograms/year/person).

5.8 Projections of demand and supply of China's forest products to 2010

According to predictions by the Sector of Forest Resources Survey and Planning of China, the standing volume of forests in China will reach 11 billion m^3 by 2010, annual net increment will be maintained at 447 million m^3, annual consumption of forest resources will be 384 million m^3, and the predicted annual surplus (excess of increment over fellings) will be 63.19 million m^3. According to this prediction, China's capacity of industrial roundwood supply will be 180 million m^3 (including sawlogs and veneer logs, roundwood used by farmers, and roundwood used for cultivation of fungi) by 2010 (table 5.8.1).

According to the statistics and projections by relevant experts, China's industrial roundwood demand by 2010 will be about 360 million m^3. However, China's capacity of roundwood supply by then will be only 50% of the

TABLE 5.8.1

Projections of China's roundwood utilization to 2010

(1,000 m^3)

		1993	*1995*	*2000*	*2010*
Commercial	Forest resource consumption	154,710	165,230	186,570	212,180
	%	45	49	52	55
	Equivalent of roundwood production	94,370	100,790	113,810	129,430
	%	40	44	47	50
Fuelwood	Forest resource consumption [1]	112,080	91,410	91,290	91,280
	%	33	27	26	24
	Equivalent of roundwood production	95,270	77,700	77,600	77,590
	%	40	34	32	30
Wood consumed by farmers	Forest resource consumption [2]	70,140	73,340	74,880	74,060
	%	20	22	21	19
	Equivalent of roundwood production	42,780	44,740	45,680	45,180
	%	18	20	19	18
Wood used for fungi cultivation	Forest resource consumption [3]	6,880	5,640	5,880	6,470
	%	2	2	2	2
	Equivalent of roundwood production	5,850	4,800	5,000	5,500
	%	2	2	2	2
Total	Forest resource consumption	343,810	335,620	358620	383,990
	%	100	100	100	100
	Equivalent of roundwood production	238,270	228,030	242,090	257,700
	%	100	100	100	100

The recovery rate for wood used by cultivation sector and fuelwood is 85%.

[2] The conversion rate between wood production and its consumption of tree standing volume for commercial wood and wood used by farmers themselves is 61%.

[3] Roundwood used to grow edible fungi and to construct required structures.

Source: China's State Administration of Forestry demands. Therefore, to reduce the pressure from consumption of forest resources, the Chinese government has decided to adopt the following measures to alleviate conflicts between demand and supply:

- Expand the developing scale of the country's fast-growing and high-yielding plantation base for sawnwood;
- Expedite the pace of tending and structuring existing young and medium-aged forests;
- Expand industrial utilization of bamboo culms and agricultural residues;
- Adjust product structure, developing preferentially various kinds of composite wood products (laminated boards, finger-jointed wood, particle board, MDF, artificially combined veneer, and paper and paperboard) by using small-diameter, fast-growing tree species, wood residues, bamboo and agricultural residues as raw materials.

Even if the above-mentioned measures are adopted, experts consider that the gap of 65 million m^3 between supply and demand will remain.

China's forest resources will have a structural shortage by 2010. Especially rare will be large-diameter and high quality trees. There will be a severe shortage of some hardwood species. However, small-diameter trees will be in surplus.

Along with the improvement of people's standard of living and the rapid increase of demand for wood used in interior housing decoration and furnishing, the gap between supply and demand with respect of large-diameter roundwood of high quality (especially of rare hardwood trees) will increase further. As the demands can not be met by domestic timber resources in short term, international timber markets have to be relied on.

According to the foregoing projection and analysis, China's wood imports will not increase considerably in total volume, but will change significantly in imported varieties. Imports of pulp, and paper and paperboard will decline, while the imports of veneer, sawnwood and roundwood will continue to increase, which percentage in total import volume of wood will also be further increased.

The import volume of plywood will depend on competitive roundwood import prices and availability (mainly of tropical roundwood). If more countries forbid or restrict tropical roundwood export, the prices of roundwood and plywood will increase considerably, thus the import volume of plywood will not increase greatly, and the import volume may even decline. Under such conditions, plywood will be substituted by other materials, such as MDF and OSB[8], for its current uses. Large-diameter roundwood of high-quality, to be demanded by people, will not only include tropical hardwood, but may also be substituted by some temperate hardwood and softwood.

According to the projections made in our ITTO project, the gap between supply and demand of industrial roundwood will reach 64.4 million m^3, and the shortage can only be resolved by higher imports of timber and timber products (table 5.8.2).

TABLE 5.8.2

Projections of Supply and Demand of China's Industrial Roundwood[1] in 2010

(1,000 m^3)

Total supply and demand in 2010	
Total demand	360,000
Domestic supply	180,000
Gap	180,000
Substitution volume	
WBP	75,000
Bamboo	14,000
Recovery of waste paper [2]	17,600
Others	9,000
Total	115,600
Actual gap	64,400

[1] Figure of fuelwood not available.

[2] The proportion of woodpulp is calculated by 22%, the amount is 11 million tons, the recycling rate of waste paper is calculated by 40%, roundwood equivalent is 17.6 million m^3.

Source: Report for ITTO Project 25/96 "China's forest production consumption and its demand for the market of international tropical forest products by 2010", 2000.

From table 5.8.3, we can see that, by 2010, China will have to import 64.5 million m^3 of wood (converted in roundwood), which will include 43.9 million m^3 of temperate wood (68.1%), and include 20.6 million m^3 of tropical wood (31.9%). According to the projections, temperate wood will be imported mainly in the form of pulp, paper and paperboard (about 70.6% in the total import volume of temperate wood) and second in the form of roundwood (9.6 m^3, about 21.9%). Tropical wood will be imported mainly in the form of plywood, veneer, and "roundwood for plywood", making 83% altogether in the total import volume of tropical wood. However, the import volume of tropical sawnwood has great potential for increasing and could increase by 172% over 1999 volumes.

---

[8] According to recent statistics, there are six OSB manufacturers in China. The total designed manufacturing capacity of all the six manufacturers was 76800 m^3 per year. But because the knowledge and experience of the properties, applications, and performance of OSB are not recognized by the Chinese market, sales have not been good. And since three mills have stopped production, the total manufacturing capacity of the six OSB manufacturers was actually only 30,000 m^3.

Based on the current situation of forest products trade in China, the distribution of forest resources in the world, and the patterns of production and trade of forest products in the world, it is estimated that China will import pulp, paper products, temperate roundwood and temperate sawnwood mainly from Russia, North America, northern Europe and New Zealand. Imports of pulp and paper products from developing countries such as Chile, Indonesia and Malaysia will increase significantly. Tropical forest products such as roundwood, plywood, veneer and sawnwood will be imported in large quantities from Malaysia, Indonesia, and Papua New Guinea, and from western African (such as Gabon, Cameroon, Equatorial Guinea, and Zaire).

TABLE 5.8.3

Forecast of China's imports of forest products, 2010

(1,000 m^3 timber equivalent [1])

	1999	2010	
		Total	*of which: Tropical timber*
Paper and paperboard	5,000	25,000	0
Paper pulp	1,500	6,000	0
Roundwood	10,140	15,100	5,500
Plywood [2]	3,800	7.600	7,600
Veneer	2,200	4,400	4,000
Sawnwood	4,480	6,400	3,500
Total	27,120	64,500	20,600

1 All supplies, demands, substitutes and imports are timber equivalent. The conversion factors for timber to wood-based panels 1:3, to waste paper 1:4, to paper and paperboard 1:5, to pulp 1:4, to plywood 1:2, to veneer 1:2 and to sawnwood 1:1.43.

2 We assumed that both import and export volumes of plywood are one-third of the total values of wood-based panel.

Source: Report for ITTO Project 25/96 "China's forest production consumption and its demand for the market of international tropical forest products by 2010", 2000.

Chapter 6

Secondary Processed Wood Products Markets[1]

Highlights

- Trade of secondary processed wood products (SPWPs) is growing faster than that of primary products in both temperate and tropical species.
- The United States and the EU are the world's major producers, importers and exporters of SPWPs.
- Volumes of SPWPs traded are difficult to assess from trade statistics, however they are still small compared to primary wood products.
- Furniture is the most traded SPWP in the ECE region and overall the region is a net importer.
- While levels of intra-regional trade continue to grow, imports from outside the region, and especially tropical SPWPs are growing faster.

Secretariat introduction

This special chapter was written by Mr. Pierre-Marie Desclos, a consultant for forest products industries. Our intention is to look closer at the secondary processed wood products sector in order to put them into perspective with the primary wood products sector that we traditionally analyse. These products have a higher unit value than primary products, but are substantially less in volume. We thank Mr. Desclos for this introduction into secondary products and we look forward to his more thorough analysis which will be published, along with considerable statistical information, in a separate *Geneva Timber and Forest Discussion Paper* and presented to the joint Timber Committee and European Forestry Commission Session.

The revised Joint Forest Sector Questionnaire as of this year has a separate section requesting countries' statistics on trade of further processed sawnwood, furniture, packaging and paper products (questionnaire in annex). While questionnaire results were not received in time for this publication, it is our intention to begin to report regularly on this important market which drives part of the demand for primary products. Aside from Mr. Desclos' personal experience and expertise, statistics in this chapter were from Comtrade (the United Nations world trade database) and COMEXT (the European Union trade database) industry associations and international organizations, specifically ITTO and FAO. A section of chapter 14 on tropical timber presents SPWPs from an ITTO perspective.

A Geneva Timber and Forest Discussion Paper is envisaged in 2000 in which the author will expand on the topics addressed in this chapter.

---

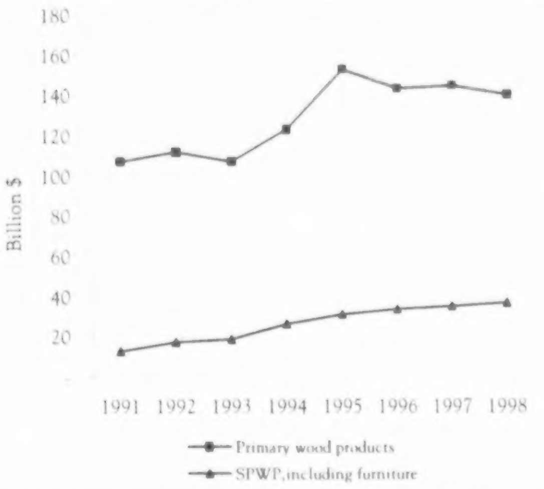
[1] By: Mr. Pierre-Marie Desclos, Consultant, Via Cassia, 1004, I-00189 Rome, Italy, Telephone +39 06 3031 1046, Fax +39 06 3031 1293, E-mail: pmd@fnc.net

6.1 Introduction

In recent years there has been a rapid expansion of the international trade of secondary processed wood products (SPWPs). This evolution is driven by several factors:

GRAPH 6.1.1

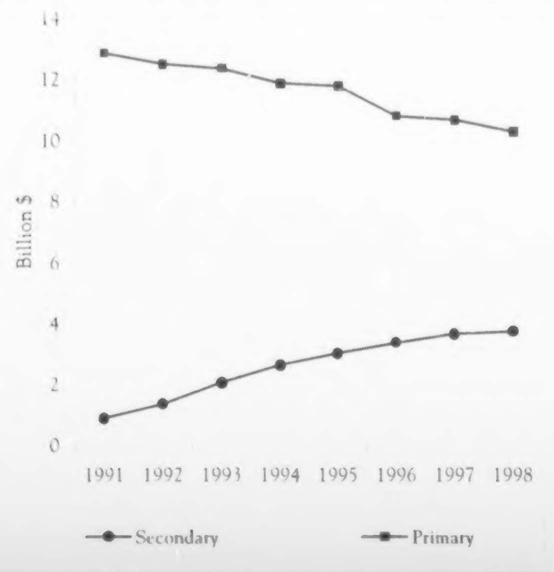
World trade of SPWPs versus primary products, 1991-1998



Sources: FAO, 2000; and Comtrade, 2000

GRAPH 6.1.2

ITTO "consumer countries'" imports of primary and secondary tropical timber products, 1991-1998



Source: ITTO, 2000.

- the development of consumption in various economic areas of the globe;
- a revision of the structure of manufacturing industries, focusing on core-competence, opting for less vertical integration and consequently more out-sourcing ;
- the differential of manpower costs between developing and developed nations;
- the governmental incentives of many developing countries aiming at adding value locally and the resultant investments; and
- improved and competitive delivery logistics.

The volumes traded of SPWPs are small compared to primary-processed wood products, such as roundwood, sawnwood, wood-based panels and pulp and paper. However, the value of trade is rising much faster (graph 6.1.1). For the graph, export values are used.

In tropical timber, the inverted trends of imports of primary and secondary products are a result of tropical timber producers drive to produce value-added products (*Annual Review and Assessment of the World Timber Situation, 1999*, ITTO, 2000) (graph 6.1.2).

6.2 Secondary processed wood products

6.2.1 *Definitions*

In this chapter, SPWPs include essentially wood products and furniture (table 6.2.1). This report will consider the products resulting from further transformation of sawnwood and other wood-based material, excluding further-processed panels sold as such. The range of operations and process is very wide, starting with the cutting to size of components and ending with the manufacture of finished and complex products such as pieces of furniture.

6.2.2 *Tracking SPWPs*

The trading of SPWPs at any intermediate steps of a given manufacturing process, as semi-finished components or as finished parts, makes their identification and definition at some stages uncertain. It is also worth noting that finished, and even semi-finished products, are rarely made only of wood. They may incorporate chemicals, finishes, hardware, plastic, glass, metal or leather components. This should be remembered when analysing and/or comparing the value of various groups of products. The complexity of analysing all theses factors partly explain why the headings "Other products" are frequently so big.

In some high value-added products, traditionally listed under "wooden" headings, the wood material, in quantity and value, accounts for a very minor share of the final product value.

Considering the specificity of furniture as a product and market group, and to make it more easy to read, this report has divided SPWP in two sectors:

- *wood products*, grouping items listed under HS codes 44: profiles and mouldings, painting frames, packing boxes, coopers' products, tools, builders' joinery and carpentry, tableware, marquetry and other articles; and
- *wood furniture*, grouping items listed under HS codes 94: seats (upholstered seats, seats and furniture for office, kitchen, bedroom and other uses).

The list of products selected to build this report is presented in table 6.2.1. The short descriptions used in the table are as close as possible to the international

TABLE 6.2.1

List of products mentioned in the report and their codes

Harmonized System [1] *code*	*Product description*
WOOD PRODUCTS	
4409	Continuously shaped wood (including strips and friezes for parquet flooring, not assembled) (moulded tongued, grooved, rebated, chamfered, V-jointed, beaded, rounded, etc.) along any of its edges or faces, whether or not planed, sanded or finger-jointed.
4414	Wooden frames for pictures, paintings, photographs, mirrors, etc.
4415	Wooden packing cases, boxes, crates, drums and similar packings, cable-drums of wood, pallets, box pallets etc.
4416	Barrels, casks, vats, tubs and other coopers' products and parts thereof, of wood, including staves.
4417	Tools, tool bodies, tool handles, broom or brush bodies, show lasts, etc.
4418	Builders' joinery and carpentry, including cellular wood panels 441810 Windows and their frames 441820 Doors and their frames and thresholds 441830 Parquet panels 441840 Formwork (shuttering) for concrete 441850 Shingles and shakes 441890 Other
4419	Tableware and kitchenware, of wood
4420	Wood marquetry and inlaid wood; caskets and cases for jewellery or cutlery, and similar articles, of wood; statuettes and other ornaments, of wood; wooden articles of furniture not falling within chapter 94
4421	Other articles of wood: Clothes hangers, spools, spindles, bobbins, blind rollers, match splints, toothpicks, etc.
FURNITURE	
Seats, with wooden frames	
940161	Upholstered
940169	Others
Wooden furniture	
940330	For office
940340	For kitchen
940350	For bedroom
940360	Other wooden furniture
940390	Parts of furniture [2]

---

[1] Nomenclature.

[2] The Comtrade six-digit heading 940390 covers all types of furniture parts, of metal, plastic or other material. In some national systems, eight-digit subheadings identify the wooden parts, such as COMEXT 9403.90-30 or the United States Schedule B 940390-70.

customs nomenclature and in some cases differ from the customary trade terminology. For example, "wood continuously shaped" regroups a wide range of products, each of them traded with specific commercial denomination: strips, friezes, sidings, claddings, panelling, sauna boards, wainscoting, mouldings, rods, dowels, etc.

Species are often used as a classification criteria within some products groups. It should nevertheless be noted that modern manufacturing technologies allow finger jointing, veneer-wrapping, gluing and assembling of different species together and this is frequently done.

6.2.3 Nomenclature

The codes and classification mentioned in this report refer to the Harmonized System (HS), used by most of the world's major trading nations. The 6 digit codes are defined by an international convention. For further differentiation, other digits may be added at a national level and may differ from country to country.

6.2.4 Sources of information

There are several sources of statistics regarding the trade flows of SPWPs. The main sources for this chapter are the following:

- the Comtrade database of the United Nations;
- the COMEXT database of the European Union's Eurostat;
- the United States Department of Agriculture's Foreign Agricultural Service database; and
- the ITTO publications and reports.

The production of finished products is documented by national statistics, even if they are rarely as detailed as the customs statistics.

Due to the impracticability of classification and coding of domestic trade, it is much more difficult to obtain information about products traded locally as semi-finished elements or components. As a consequence it is also difficult to evaluate what percentage of SPWPs is outsourced. Even if there is a growing share of semi-finished SPWPs being outsourced nationally or internationally, the tradition is that many SPWPs are elaborated "in house" and their integrated production cannot be tracked with accuracy by the national statistics offices which are responsible for collecting and processing industrial production and trade data.

Some trade and industry associations, at national or international level, publish data allowing evaluation of the importance of the various industrial sectors or sub-sectors. This is the case, amongst many others, of the European Panels Federation (EPF) and the Fédération Européenne du Parquet (FEP).

6.2.5 Volume, surface, length or value ?

SPWPs can be measured in many ways, but in this report the flows of products are expressed in value. To be of some use, the evaluation of SPWP quantities can be made on a physical basis (volume, length or surface), but only for standard commodities or in reference to detailed specifications.

6.2.6 Geographic scope

This chapter considers the markets of the ECE countries, their trade (import and export) amongst themselves and with the rest of the world.

6.3 Main flows and trade patterns

6.3.1 Total trade

Furniture is by far the main product traded by ECE countries, both as importers and exporters (table 6.3.1)

6.3.2 The wood products sector

The United States and Germany are by far the largest importers of SPWPs, while Canada is the premier exporter (tables 6.3.2 and 6.3.3).

For each major importing and exporting country, breakdowns of imports and exports by products will be presented in the *Discussion Paper*.

TABLE 6.3.1

Imports and exports of SPWPs by ECE countries, 1998

(Value in million $)

	Imports	*Exports*
WOOD PRODUCTS		
Builders joinery & carpentry	4,765	4,889
Continuously shaped wood	1,969	1,423
Packing cases, pallets	1,070	1,098
Marquetry	846	261
Frames for pictures	508	186
Tableware	281	120
Barrels, casks	225	289
Tools and handles	141	111
Other articles of wood	2,114	1,537
Total	11,919	9,913
WOOD FURNITURE		
Upholstered seats	3,824	4,263
Chairs	1,490	849
Office furniture	1,572	1,758
Kitchen furniture	1,606	2,082
Bedroom furniture	2,872	2,733
Other wooden furniture	8,288	8,112
Total	19,653	19,797

Source: Comtrade, 2000.

Ranked by value, imports and exports show similar patterns, except for the cooper's products which are quite localized, both in production and imports (table 6.3.1).

Within the wood products sector, the value of trade in joinery and carpentry is the highest. It includes a wide range of products such as windows, doors, assembled flooring, concrete forms, shingles and shakes.

The main importers and exporters of each product will be presented in the *Discussion Paper*.

TABLE 6.3.2

Main importers of secondary wood processed products[1] (ECE countries), 1998

(million $)

United States	3,490
Germany	2,155
United Kingdom	949
France	617
Italy	600
Belgium and Luxembourg	539
Canada	529
Netherlands	456
Austria	403
Switzerland	371
Spain	301

[1] Continuously shaped wood, builders joinery and carpentry, and other articles of wood.

Source: Comtrade, 2000.

TABLE 6.3.3

Main exporters of secondary processed wood products[1] (ECE countries), 1998

(million $)

Canada	1,671
United States	1,007
Germany	846
Italy	821
France	730
Sweden	600
Denmark	564
Poland	548
Austria	507
Belgium and Luxembourg	436
Spain	361
Netherlands	302
United Kingdom	279
Switzerland	110

[1] Continuously shaped wood, builders joinery and carpentry, and other articles of wood.

Source: Comtrade, 2000.

6.3.3 Furniture

Furniture is a product with a high value-added ratio. In some types of furniture, the wood material used is the very core of the value of the piece of furniture but in others, like some upholstered chairs, the proportion of wood, in value and volume, is minimal while the piece of furniture is still classified under the heading "Seats, with wooden frames". Upholstered furniture has the highest trade value in the ECE, followed by bedroom, kitchen and office furniture (table 6.3.1).

The United States is the world's main importer of furniture (30% of the total import of ECE countries), followed by Germany and France (table 6.3.4). Italy is the leading exporter with 26% of the total exported (table 6.3.5).

TABLE 6.3.4

Main importers of furniture (ECE countries), 1998

(million $)

United States	5,955
Germany	3,256
France	1,729
United Kingdom	1,340
Belgium and Luxembourg	995
Switzerland	936
Netherlands	878
Austria	762
Canada	562
Norway	491
Sweden	379
Denmark	335

Source: Comtrade, 2000.

TABLE 6.3.5

Main exporters of furniture (ECE countries), 1998

(million $)

Italy	5,174
Germany	2,218
Canada	1,669
Denmark	1,558
Poland	1,408
France	960
Belgium and Luxembourg	914
United States	850
Spain	809
Sweden	692
United Kingdom	671
Austria	397

Source: Comtrade 2000.

TABLE 14.3.1

Composition of exports by producing regions, 1997-1999

(1,000 m^3 rwe)

	Log production			Log exports			Processed exports			Total exports		
Region	1997	1998	1999	1997	1998	1999	1997	1998	1999	1997	1998	1999
Africa	11,089	10,476	10,349	5,338	4,390	3,933	3,062	3193	3490	8,400	7,583	7,423
Asia Pacific	84,141	70,258	70,202	10,233	8,019	8,570	37,206	34,271	34,378	47,439	42,290	42,948
Latin America	31,436	32,245	32,840	236	234	255	3,654	3,091	2,351	3,890	3,325	2,606
Total	126,667	112,979	113,391	15,808	12,643	12,757	43,922	40,560	40,216	59,730	53,203	52,973

Note: totals may not sum exactly due to rounding.

Source: ITTO, 2000.

TABLE 14.3.2

Tropical timber export ratios, 1997-1999

	Log exports as a % of production			Log exports as a % of total exports			Processed exports as a % of total exports		
Region	1997	1998	1999	1997	1998	1999	1997	1998	1999
Africa	48	42	38	64	58	53	36	42	47
Asia Pacific	12	11	12	22	19	20	78	81	80
Latin America	1	1	1	6	7	10	94	93	90
Total	12	11	11	26	24	24	74	76	76

Source: ITTO, 2000.

TABLE 14.3.3

Tropical forest products exports, 1997-1999

(1,000 m^3)

	1997	1998	1999
AFRICA			
Logs	5,338	4,390	3,933
Sawnwood	1,212	1,284	1,376
Veneer	309	354	382
Plywood	117	80	113
ASIA PACIFIC			
Logs	10,233	8,019	8,570
Sawnwood	3,740	3,826	3,862
Veneer	977	943	1,013
Plywood	12,410	11,094	11,054
LATIN AMERICA/CARIBBEAN			
Logs	236	234	255
Sawnwood	1,101	946	592
Veneer	15	16	14
Plywood	705	582	542
TOTAL			
Logs	15,808	12,643	12,757
Sawnwood	6,053	6,057	5,830
Veneer	1,301	1,313	1,409
Plywood	13,232	11,757	11,708

Source: ITTO, 2000.

14.3.1 Logs

Graph 14.3.1 shows the major ITTO tropical log exporters in 1997 to 1999, ranked by 1998 export volume. Total ITTO producer member exports were just over 12.6 million m^3 in 1998. Log exports by producer members increased by 1% in 1999 to just under 12.8 million m^3. Malaysia continues to dominate the trade in tropical logs with almost 5.6 million m^3 exported in 1998, constituting 44% of ITTO producer member exports. Malaysia's log trade in 1998 decreased in volume by 15% from 1997 levels but increased to 6.0 million m^3 in 1999. The reduction in 1998 was due mainly to decreased exports from the east Malaysian state of Sarawak. Malaysia's major log customers are all in Asia, with Japan, China (including Taiwan Province of China) and India accounting for 91% of the reported log export volume in 1998.

Papua New Guinea was the third largest tropical log exporter, with exports of 1.6 million m^3. Exports from PNG decreased almost by half in 1998 as the country was hard hit by the Asian economic crisis. The bulk of PNG's log exports (73% in 1998) go to Japan and the Republic of Korea, with the Philippines' market accounting for about 9% in 1998 (mainly in lower grades). Official log export statistics for Myanmar (the sixth largest log exporter in 1998 at 656 418 m^3 not shown in the graph) showed an increase of 36% in 1998, but all exports may not be accounted for by official figures. Myanmar's main trading partners are India, Thailand, Japan and China.

Africa supplies the majority of the remainder of world tropical hardwood log exports. Gabon and Cameroon are the region's largest exporters (and ITTO's second and fourth largest), but Republic of Congo, Central African Republic, Democratic Republic of Congo, Côte d'Ivoire and Liberia also exported substantial quantities of logs in 1998. Gabon and Cameroon experienced decreases (38% and 9%, respectively) in 1998 exports as trade to Asia plunged. Côte d'Ivoire's exports fell by over two-thirds in 1997 as log export restrictions took effect. Cameroon also imposed limitations on log exports in 1999, further reducing African exports. Ghana, a former top exporter, has banned exports of tropical hardwood logs since 1995. The resolution of Liberia's civil war that led to drastic decreases in official production and exports until 1996 has led to a resumption of log exports, which doubled in 1997 and increased by 65% in 1998. African exports went primarily to France, China, Italy, Portugal and Japan in 1998.

The recent resumption of Indonesian log exports after a 13-year moratorium does not appear to have resulted in significant official log exports, with less than 100,000 m^3 exported in 1998. Malaysia reported imports of over 400,000 m^3 of Indonesian logs in 1997, but only 7,000 in 1998. In late 1998, Japan reported its first shipments of meranti logs (about 19 000 m^3) from Indonesia since February 1985. Most observers agree that substantial unofficial Indonesian log exports exist, mostly from Kalimantan into the Malaysian states of Sabah and Sarawak.

Re-exports of logs by consumer countries increased by 28% to 110,000 m^3 in 1998, 75% of which was accounted for by inter-European trade. France, Belgium/Luxembourg and Germany were the major log re-exporters in 1998, selling tropical logs mainly to each other. The European tropical log trade, along with total consumer country exports, declined slightly in 1999.

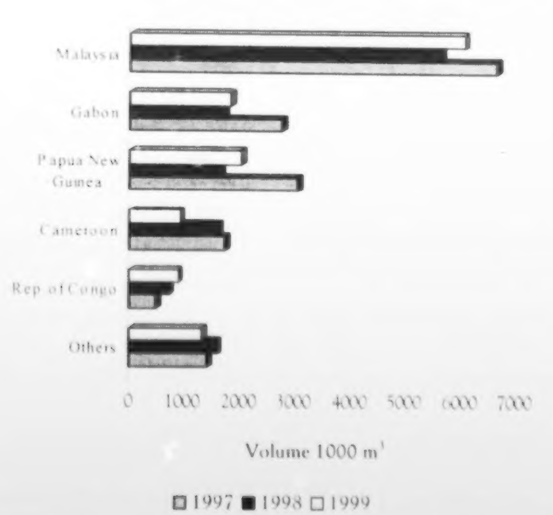
14.3.2 Sawnwood

Graph 14.3.2 shows the major ITTO tropical sawnwood exporters in 1997 to 1999, ranked by 1998 export volume. ITTO producers exported a total of 6.1 million m^3 of tropical sawnwood in 1998, level with 1997. Malaysia continues to dominate the trade in tropical sawnwood, with the 2.7 million m^3 exported in 1998 constituting 44% of total ITTO producing member exports. Malaysia's sawnwood trade fell 9% in 1998 due to the economic crisis and as raw materials continued to be directed to plywood production and other secondary processing. Malaysia's major sawnwood customers in 1998 were mainly in Asia (Thailand, China, Japan, Taiwan Province of China and Republic of Korea) and Europe (the Netherlands, Belgium/Luxembourg, France and Italy).

Indonesian exports of sawnwood almost doubled to 575,000 m^3 in 1998. Indonesia imposed export levies ranging from \$250/m^3 to \$2400/m^3 on all sawnwood exports from 1994 to 1998 and exports during these years

GRAPH 14.3.1

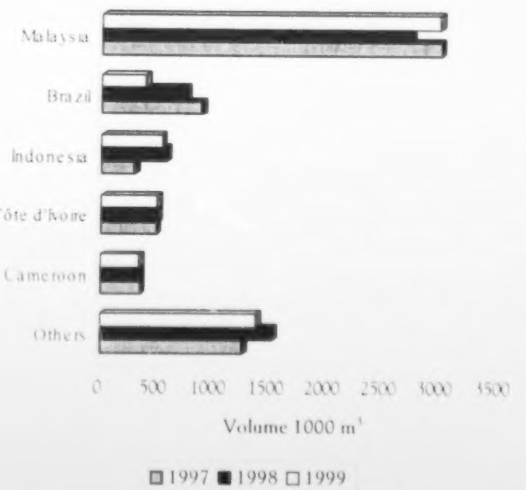
Major tropical log exporters, 1997-1999



Source: ITTO, 2000.

GRAPH 14.3.2

Major sawnwood exporters, 1997-1999



Source: ITTO, 2000.

probably include some further processed products as well as sawnwood. Sawnwood exports from Malaysia, Brazil and Cameroon decreased in 1998, while exports by Côte d'Ivoire increased slightly. In addition to these countries, Myanmar and Ghana exported over 250,000 m^3 of sawnwood in 1998.

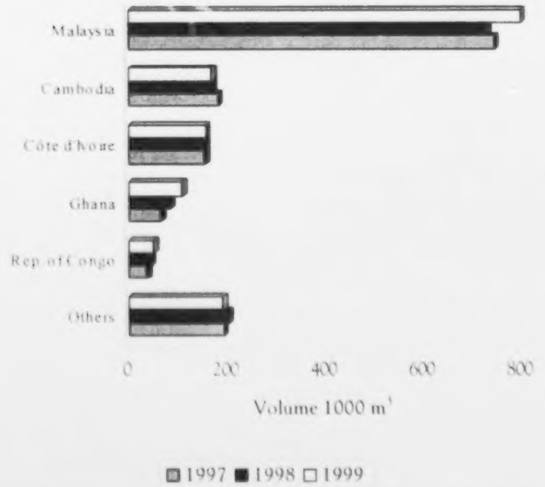
ITTO consumer countries exported 388,000 m^3 of tropical sawnwood in 1998, primarily (86%) from the EU countries. EU exports of tropical sawnwood increased from 167,000 m^3 in 1995 to 335,000 m^3 in 1998. Belgium/Luxembourg and the Netherlands, both larger tropical sawnwood exporters than most producing countries, are the main EU sawnwood exporters. Both these countries saw exports jump in 1998, up 126% to 120,000 m^3 in Belgium and 19% to 80,000 m^3 in the Netherlands. Mostly high-value (or high value-added) species of sawnwood are being exported by these countries, primarily to other countries in Europe.

14.3.3 Veneer

Graph 14.3.3 shows the top ITTO tropical veneer exporters in 1997 to 1999, ranked in order of 1998 export volume. Total ITTO producing member exports were over 1.3 million m^3 in 1998, up slightly from 1997. ITTO producer country veneer exports jumped 8% in 1999 to 1.4 million m^3, the only product for which exports continued increasing through the economic crisis. Malaysia continues to be ITTO's dominant veneer exporter, with exports of 730,000 m^3 in 1998 accounting for 56% of total ITTO producer member exports. Malaysian exports are mainly directed to China, Taiwan Province of China, Japan, the Philippines and the Republic of Korea.

GRAPH 14.3.3

Major tropical veneer exporters, 1997-1999



Source: ITTO, 2000.

Cambodia was the second largest tropical veneer exporter in 1998 at 170,000 m^3, a decrease of 7% from 1997 exports. Cambodia's veneer markets are China and Taiwan Province of China. Côte d'Ivoire is the third largest ITTO tropical veneer exporter with exports stable at 156,000 m^3 in 1998. Côte d'Ivoire's exports are primarily to the EU.

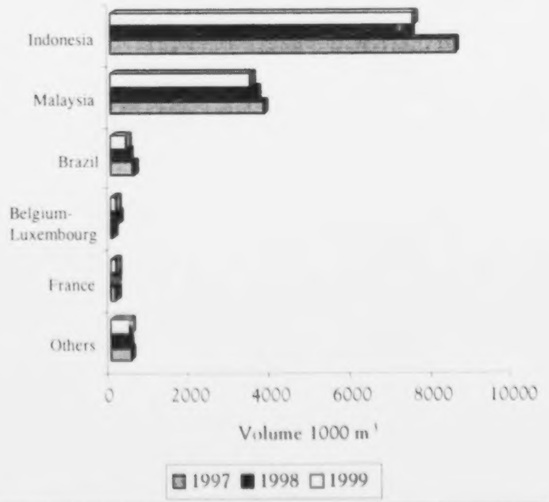
The EU accounted for 65,000 m^3 of total consumer country tropical veneer exports of 77,000 m^3 in 1998, with 1999 levels of EU exports dropping to 61,000 m^3. France, the Netherlands, Belgium-Luxembourg and Germany are the largest EU tropical veneer exporters. Consumer country exports of tropical veneer are usually of much higher value than those from producer countries. Total exports by ITTO consumer countries decreased to 69,000 m^3 in 1999.

14.3.4 Plywood

Graph 14.3.4 shows the major ITTO tropical plywood exporters in 1997 to 1999. In 1998, ITTO producer members exported almost 11.8 million m^3. Tropical plywood exports by producers fell by 11% in 1998, but were stable in 1999. Indonesia continues to dominate the trade in tropical plywood with the 7.4 million m^3 exported in 1998 constituting 63% of total ITTO

GRAPH 14.3.4

Major tropical plywood exporters, 1997-1999



Source: ITTO, 2000.

producer member exports, although this is down from 84% in 1991. Indonesia's exports stabilized in 1999, although with prices already close to production costs for many producers, and with the continuing economic crisis in Indonesia, further declines may be in store.

Malaysia is Indonesia's major competitor in the tropical plywood trade. Malaysian exports decreased by 5% to 3.6 million m^3 in 1998, and dropped further to 3.5 million m^3 in 1999. Malaysia's rapid growth in plywood exports up to 1997 was due to the construction of new plywood mills in Sabah and Sarawak to process formerly exported veneer logs; the two eastern Malaysian states account for almost all of Malaysian plywood exports. In 1998 Malaysia exported almost $1.7 billion worth of plywood, mainly to Japan, China (including Taiwan Province of China), the United States and non-ITTO member Singapore. Latin American plywood exports declined in 1998 to 582,000 m^3 due to a 20% drop in Brazil's exports to 465,000 m^3 (due primarily to the strength of the Brazilian currency). Exports dropped again in 1999 despite Brazil's devaluation, but were offset by increased exports of softwood plywood which may soon exceed exports of tropical plywood. The United States and the EU are the major markets for Brazil's plywood. Africa's plywood exports, remained relatively minor at under 80,000 m^3 in 1998 but jumped to 113,000 m^3 in 1999 led by an increase in Cameroon's exports.

Tropical plywood exports from the EU jumped 51% in 1998, driving ITTO consumer country exports up by 26% to 512,000 m^3 (over 80% from the EU). Consumer exports dropped back to 469,000 m^3 in 1999 due to slower EU exports.

14.4 Imports

Table 14.4.1 provides an overview of the dependence of major ITTO importers on tropical wood products in 1998. Major importers are defined here as those with imports of at least 100,000 m^3 of one or more tropical products. The table indicates in which products each country qualifies as a major importer by entering the relevant figures in bold and italics; only China and Taiwan Province of China qualify as major importers of tropical timber under this criterion in all product categories. Of the ITTO consumer members shown,

TABLE 14.4.1

Tropical proportion of total imports by major ITTO importers, 1998

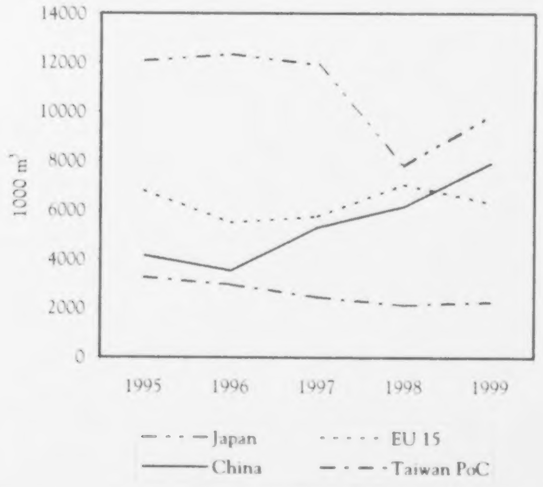
	Proportion (%)			
	Logs	*Sawnwood*	*Veneer*	*Plywood*
Consumer Members				
Belgium-Luxembourg	2.9	***11.5***	27.7	***63.2***
Canada	0.0	0.6	5.3	***17.7***
China	***39.4***	***50.0***	***98.5***	***90.6***
(Taiwan Province of China)	***70.6***	***28.8***	***97.4***	***48.1***
Egypt	10.0	0.2	100.0	***71.4***
France	***50.3***	***12.8***	25.7	***48.0***
Germany	***7.1***	***3.2***	19.9	***17.5***
Italy	***9.3***	***6.4***	49.5	***27.8***
Japan	***22.6***	***9.7***	51.5	***91.0***
Netherlands	19.4	***10.2***	35.7	***41.2***
Portugal	***23.5***	***47.2***	37.5	14.3
Rep. of Korea	***15.1***	***54.6***	58.4	***91.2***
Spain	***18.5***	***26.4***	64.3	4.8
United Kingdom	3.4	***2.8***	15.6	***41.2***
United States	0.7	***0.8***	19.7	***70.5***
Producer Members				
Brazil	28.6	***98.0***	21.1	100.0
India	***99.3***	16.7	0.0	100.0
Malaysia	100.0	***80.5***	100.0	100.0
Philippines	***46.7***	***78.7***	100.0	100.0
Thailand	***91.7***	***88.4***	27.3	0.0

Source: ITTO, 2000.

China (including Taiwan Province of China) appears to be the most dependent on tropical imports. Nearly a majority of its substantial log, sawnwood, veneer and plywood imports are of tropical origin. Unsurprisingly, given the dominance of tropical plywood in international plywood trade, most countries have a fairly high dependence on tropical plywood imports, with China, Japan and the Republic of Korea dependent on tropical sources for over 90% of total imports (although this dependence is decreasing). Tropical sawnwood has a low market share in most non-tropical countries, with only China, Portugal and the Republic of Korea dependent on it for 40% or more of their sawnwood imports. Only Taiwan Province of China and France amongst major consumer countries imported a greater proportion of tropical than non-tropical logs in 1998. In contrast to consumer countries, most of the major ITTO producer country importers depend on tropical imports for the majority of their imported wood needs. This is changing, however, with for example, the Philippines now sourcing more than half of its log imports from non-tropical areas.

GRAPH 14.4.1

Imports of tropical wood products, 1995-1999



Note: Tropical wood products here are logs sawnwood, veneer and plywood together.

Source: ITTO, 2000.

14.4.1 Logs

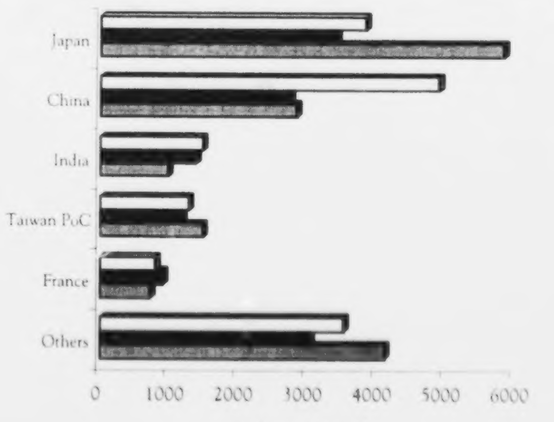
Total imports of tropical hardwood logs by ITTO members (consumers and producers) dropped 21% to under 12.8 million m^3 in 1998. Graph 14.4.2 shows the top ITTO tropical log importers in 1997 to 1999, ranked by import volume in 1998. Japan still dominates the global tropical log market, with 3.4 million m^3 imported in 1998. Japanese tropical log imports plummeted by 41% in 1998 due to its declining economy and reduced supplies from Malaysia, which nonetheless remained Japan's major tropical log supplier (65%). Japan imported about 95,000 m^3 of logs from Africa and 861,000 m^3 from Papua New Guinea in 1998. Japan's imports increased to almost 3.9 million m^3 in 1999 as its economy recovered.

China is the second largest ITTO tropical log importer, with imports of almost 2.8 million m^3 in 1998, almost triple 1996 imports. While the inclusion of available statistics for Hong Kong in China's imports for 1998 accounts for a small part of this increase (most of Hong Kong's tropical imports are eventually re-exported to the mainland), China's growing economy, a relaxation of log import tariffs and a ban on domestic harvesting were the main driving factors (see chapter 5). China's imports leapt another 78% in 1999 to over 4.9 million m^3 making it ITTO's largest tropical log importer. India is the third largest importer of tropical logs, at 1.4 million m^3 in 1998, mostly from Malaysia and Myanmar but with an increasing component of African logs.

The Republic of Korea is also a major ITTO log importer, absorbing almost 660,000 m^3 in 1998 from PNG (46% of total imports) and Malaysia (34%, down from 71% in 1993). Korea's imports were down over 44% from 1997 levels, but rebounded 59% to 1.1 million m^3 in 1999 as its economy recovered. Korea, like Japan and some other Asian consumers, is undertaking to shift processing capacity to producing countries, closer to resources and

GRAPH 14.4.2

Major tropical log importers, 1997-1999



Source: ITTO, 2000.

cheaper labour. Korea's imports of logs from Africa grew from 21,000 m^3 in 1992 to 251,000 m^3 in 1994. However, the ban on exports from Ghana (Korea's main African supplier in those years) led to a sharp drop in imports from Africa, to 6,000 m^3 in 1996 before recovering to 31,000 m^3 in 1997. Korea's main African suppliers are now Gabon and Cameroon, from which it imported a total of 16,000 m^3 in 1998. Much of Korea's tropical log supply is now being sourced from the Solomon Islands, which provided 207,000 m^3 of logs in 1997 before a sharp decline in 1998.

The EU countries imported almost 2.8 million m^3 of tropical logs in 1998, most of which came from African producers. European log imports jumped 35% in 1998, offsetting some of the decline in Africa's exports to Asia. France remains the largest of the EU log importers; its imports increased by almost 25% in 1998 to 923,000 m^3 before decreasing by 11% to 820,000 m^3 in 1999. The bulk of France's tropical log supplies come from Gabon, Cameroon and Republic of Congo. Portugal, Italy and Spain are also major European log importers, each with over 350,000 m^3 of log imports in 1998. European log imports decreased 16% in 1999 to just over 2.3 million m^3.

Several ITTO producing countries have become net importers of logs, indicating the extent of wood shortages in their domestic forest sectors. India (1.4 million m^3), Thailand (255,000 m^3), and the Philippines (202,542 m^3) were the major ITTO producer country importers of tropical logs in 1998, reflecting resource scarcity and increased timber demand in these countries. Total imports of tropical logs by ITTO producing members dropped 26% in 1998, to 1.9 million m^3, before rebounding to almost 2.5 million m^3 in 1999, reflecting the recovery in many producer economies.

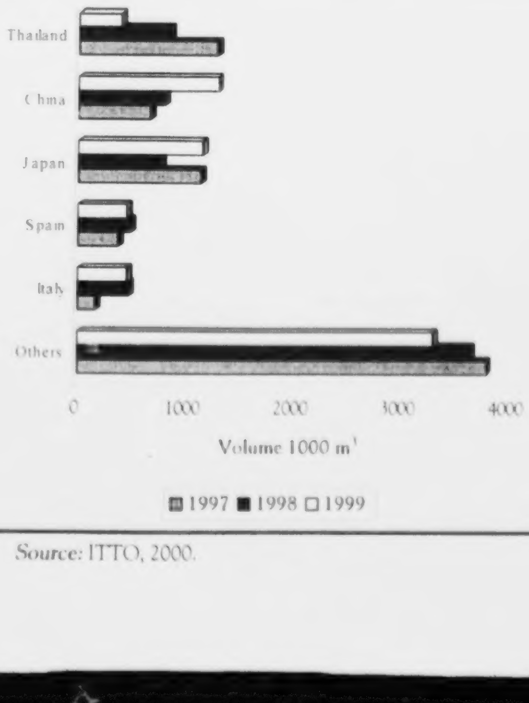
14.4.2 Sawnwood

Total ITTO imports of tropical sawnwood decreased 5% to under 7 million m^3 in 1998 and remained at this level in 1999. Graph 14.4.3 shows the major ITTO sawnwood importers in 1997 to 1999, ranked by order of 1998 import volume. With 1998 imports of over 850,000 m^3, Thailand remained the top ITTO sawnwood importer, although its imports had dropped sharply from the 2.1 million m^3 imported in 1996 before its economy crashed. Thai imports slid to 391,000 m^3 in 1999 as the economic woes plaguing the country continued to take their toll on its large furniture and secondary processing industries. Both Thailand's and Japan's tropical sawnwood imports are primarily from Malaysia (81% and 45%, respectively). Japan dropped to ITTO's third largest tropical sawnwood importer in 1998 as its imports plunged by 33% to 757,095 m^3 before rebounding to almost 1.2 million m^3 in 1999. Japan also imported substantial quantities of sawnwood from Indonesia (44%) in 1998. China became the second largest ITTO importer of tropical sawnwood in 1998 at 800,000 m^3 rising to the top spot with a 61% surge to almost 1.3 million m^3 in 1999. Spain, Italy, Taiwan Province of China, the Netherlands, the United States and Malaysia were also major tropical sawnwood importers. Imports by Taiwan Province of China and Republic of Korea were primarily from Malaysia and (to a lesser extent) Indonesia; Malaysia's were from Indonesia (although no corresponding trade flow was reported by Indonesia); and the others' from Latin America and Africa. As the size of the bar for "Others" in graph 14.4.3 indicates, the tropical sawnwood market is the most diversified of all primary tropical timber products, with the five largest importers accounting for less than half of total ITTO imports in 1998.

Total tropical sawnwood imports by EU countries rose by 29% in 1998 to almost 2.6 million m^3. More than half of this was supplied by Asian producers (principally Malaysia and Indonesia) to the Netherlands, Belgium and Italy. Côte d'Ivoire, Ghana, Cameroon and Brazil supplied virtually all of the remainder of EU imports. EU imports decreased 10% in 1999 to 2.3 million m^3. Spain is the largest importer of tropical sawnwood in the EU, absorbing 489,000 m^3 in 1998 and 450,000 m^3 in 1999. Italy (470,000 m^3), the Netherlands (357,000 m^3), France (337,000 m^3) and Belgium (276,000 m^3) were other major EU tropical sawnwood importers in 1998. All these countries decreased their imports of tropical sawnwood in 1999.

GRAPH 14.4.3

Major tropical sawnwood importers, 1997-1999



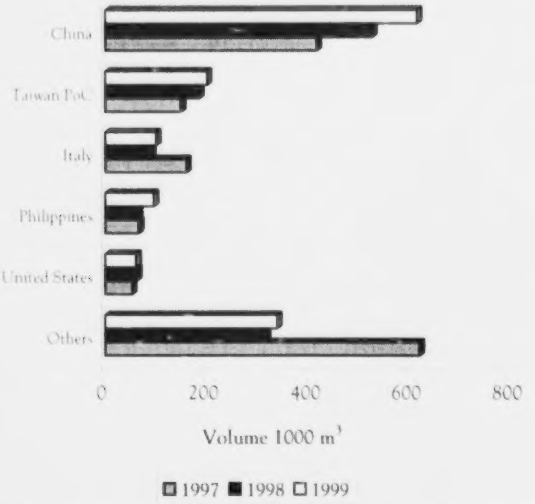
Source: ITTO, 2000.

14.4.3 *Veneer*

Graph 14.4.4 shows the major ITTO veneer importers for 1997 to 1999. Total ITTO imports of tropical veneer decreased 15% to 1.2 million m^3 in 1998. The drop in imports was due primarily to a 78% drop in demand by the Republic of Korea (the number three importer in 1998) from 263,000 m^3 to 59,000 m^3. Imports by Asian countries are primarily sourced from Malaysia (although China reported imports of over 139,000 m^3 from Cambodia), while the majority of European imports are from African producers (mainly Côte d'Ivoire, but increasingly also from Ghana and the Republic of Congo). The EU absorbed 245,000 and 262,000 m^3 of tropical veneer in 1998 and 1999, one-fifth of total ITTO imports. Japan imported 52,000 m^3 of tropical veneer in 1998, 44% less than in 1997. Japan, with substantial restructuring underway in its wood panels industry, saw tropical veneer imports drop further to 48,000 m^3 in 1999. ITTO tropical veneer imports jumped 13% in 1999 to over 1.4 million m^3 due largely to increased imports by China, which is consolidating its position as ITTO's largest importer.

GRAPH 14.4.4

Major tropical veneer importers, 1997-1999



Source: ITTO, 2000.

14.4.4 *Plywood*

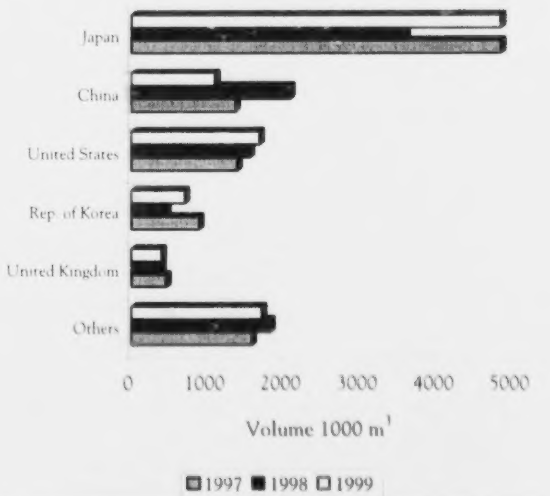
Graph 14.4.5 shows the largest ITTO plywood importers for 1997 to 1999, ranked by import volume in 1998. Total ITTO imports of tropical plywood fell by 6% to just under 9.9 million in 1998. Imports were up 5% in 1999 to over 10.4 million m^3, led by a 35% increase in Japanese demand. Exports of tropical plywood by ITTO members continue to substantially exceed aggregate imports by members, indicating the dominant position of ITTO producers in world markets for this product. The majority of all tropical plywood imports came from Indonesia and Malaysia (65% and 34% respectively in 1998 for the top importer, Japan). Japan continues to replace domestic plywood production with imported plywood (tropical and non-tropical) and substitutes like OSB and MDF. Its tropical imports dropped 26% in 1998 to 3.6 million m^3 due to the slowdown in construction accompanying the recession but recovered the lost ground in 1999. China, with almost 2.1 million m^3, continued as the second largest ITTO importer of tropical plywood with a 52% jump in 1998. However, Chinese imports dropped sharply in 1999 to 1.1 million m^3 as authorities moved to increase domestic plywood production from imported logs to boost employment and offset reduced domestic log supplies. The United States imported almost 1.6 million m^3 of tropical plywood in 1998, 62% from Indonesia, 21% from Malaysia and the rest from Latin America. United States imports, which jumped 12% in 1998, rose another 8% in 1999.

EU imports of tropical plywood totalled just under 1.5 million m^3 in 1998, up 10% from 1997. Most of this supply came from Indonesia and Malaysia, with Brazil and intra-European trade also playing a large role in many countries' imports. European imports of tropical plywood dropped by 6% to 1.4 million m^3 in 1999.

The Republic of Korea (456,000 m^3) and Taiwan Province of China (385,000 m^3) were also substantial

GRAPH 14.4.5

Major tropical plywood importers, 1997-1999



Source: ITTO, 2000.

tropical plywood importers in 1998. Korean tropical plywood imports fell by 49% in 1998 but increased to 700,000 m^3 in 1999. Indonesia has traditionally supplied almost all of Korea's plywood imports, but Malaysia increased its share from 18% in 1994 to 22% in 1998.

14.5 Prices

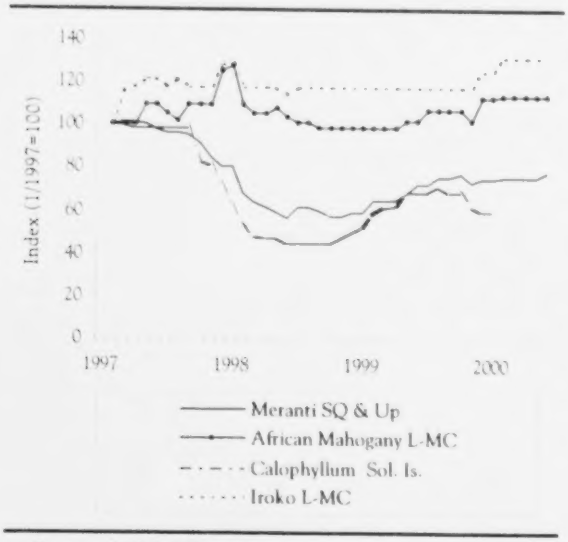
14.5.1 Logs

Real (1990) FOB prices for most important species of African log exports were relatively stable or declining during the 1998 to 1999 period. Prices of n'gollon and, particularly, sapelli were declining between the last quarter of 1998 and the first quarter of 1999. Real prices for n'gollon firmed at around \$220/m^3 (\$230/m^3 nominal) in the first and second quarter of 1999 while prices for sapelli continued declining steadily up to mid-1999 when they stabilized at around \$240/m^3 (\$252/m^3 nominal). This stabilization coincided with the introduction of regulations restricting the export of most log species in Cameroon.

Real export prices of most species of Asian tropical logs showed great volatility between 1993 and 1994 largely due to the perception of log shortages in Asia, brought about by a ban on log exports from Sabah together with tightening supplies from other tropical and non-tropical suppliers. Prices stayed relatively stable from thereafter to the end of 1997 as importers adjusted to the new supply situation. Prices gradually decreased to under \$200/m^3 in 1997 and dropped sharply to just above \$110/m^3 in mid-1998. After the sharp drop during the Asian crisis of 1997 and 1998, most species of Asian logs have been trading at real prices of \$100-\$150/m^3 from the end of 1998. Selangan batu and kapur log prices were relatively stable between mid-1998 and mid-1999 at around \$116/m^3 and \$126/m^3, respectively, although prices jumped briefly to \$138/m^3 (\$145/m^3 nominal) in January 1999. This price spike was caused by the impact of wet weather on forest harvesting and slow business activities due to Chinese New Year festivities in Malaysia. Prices for keruing and meranti logs recovered in 1999 as export markets (particularly China) increased orders for these products.

GRAPH 14.5.1

Tropical log prices, 1997-2000



Source: ITTO, 2000.

In contrast to other species, prices for teak logs were practically unaffected during the Asian financial turmoil, with prices steadily rising during 1998. Prices for 4th and SG-1 teak grades rose to \$1,662/m^3 and \$937/m^3, respectively by mid-1999 (\$1,742/m^3 and \$982/m^3 nominal), fell slightly in August and rose again in late 1999 due to a strong demand for furniture and other joinery products in export markets. Demand and prices for teak are expected to continue rising gradually.

14.5.2 Sawnwood

Real (1990) African sawnwood prices were stable or declining for several important species including mahogany (acajou) and wawa in 1998 to 1999. Prices for mahogany (one of the most valuable African sawnwood export species) rose during most of 1998 to reach \$532/m^3 (\$555/m^3 nominal), as the EU furniture sector (especially the United Kingdom) boosted imports. From the end of 1998 mahogany sawnwood prices fell steadily to \$454/m^3 (\$475/m^3 nominal) by mid-1999, a 14% drop. Prices for mahogany sawnwood rose to the end of 1999 as European markets increased orders of African sawnwood.

Prices for wawa sawnwood increased in 1998. Ghana's restrictions on log harvests and exports of air-dried timber reduced supplies and sent wawa's international prices sharply higher. Prices of wawa stabilized at around \$305/m^3 (\$318/m^3 nominal) in late 1998 but declined in 1999 to under \$285/m^3 (\$299/m^3 nominal) as competition from lower-priced Asian sawnwood, temperate hardwoods and softwoods increased.

After reaching record highs in 1994 and firming somewhat at the beginning of 1996, Asian sawnwood price trends were generally downward until 1997. Light and dark red meranti prices stabilized during the first half of 1997 at around \$700/m^3 (\$750/m^3 nominal) before falling again sharply during the second half of 1997 and first half of 1998. Meranti prices were affected by reduced demand in sawnwood export markets. The decline in the Thai market during the Asian economic turmoil drastically decreased demand for sawnwood in Southeast Asia and was a major cause of price reductions for Asian sawnwood species. Prices of dark red and light red meranti sawnwood were relatively stable in 1998 at around \$418/m^3 (\$435/m^3 nominal) and \$545/m^3 (\$523/m^3 nominal). After declining slightly in the first quarter of 1999, prices of meranti sawnwood rose steadily due to increased domestic and export demand. Importers from China, Thailand, Indonesia and Vietnam were offering higher prices for sawnwood than the Malaysian domestic price, particularly for specifications suitable for the manufacture of furniture.

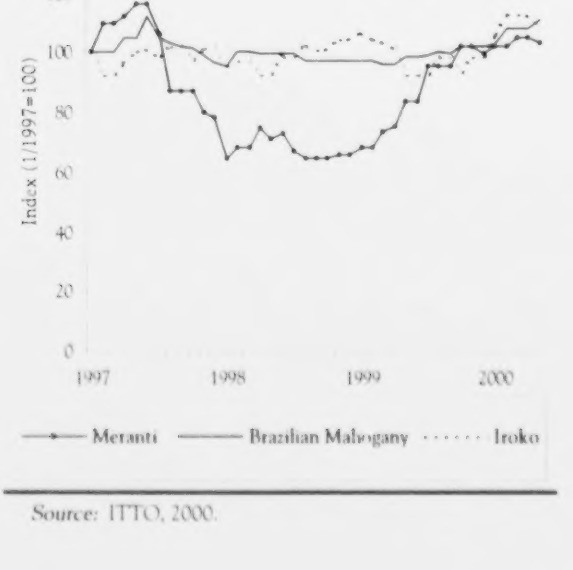
After reaching record highs of over \$950/m^3 (\$1,030/m^3 nominal) and \$479/m^3 (\$520/ m^3 nominal) in mid-1997, Brazilian mahogany and jatoba sawnwood prices declined and stablized at around \$904/m^3 (\$980/m^3 nominal) and \$470/m^3 (\$510/m^3 nominal), respectively, by late 1997. Mahogany prices have risen steadily during 1998 to 1999 as a result of greater demand in the major markets of the United States and Europe and a total ban on logging, processing and trading of this valuable species in Para State of Brazil imposed by IBAMA (the Brazilian environment agency) in 1998. The reason for the ban was the identification of serious illegal logging in this region. Jatoba sawnwood prices also showed a strong upward trend during the last half of 1999, rising by 30%. The relatively strong price trend for Latin American sawnwood is due to continued strong demand in North American and European markets as well as the strengthening of Asian currencies and increased sawnwood demand from that region.

14.5.3 Plywood

Plywood prices from Indonesia, Malaysia and Brazil have, in general, declined since 1996. In mid-1996, prices of Indonesian and Malaysian BB/CC moisture resistant (MR) plywood reached about \$500/m^3 (\$560/m^3 nominal), \$416/m^3 (\$475/m^3 nominal) and \$346/m^3 (\$400/m^3 nominal) for 2.7mm, 3mm and 3.6mm thicknesses, respectively. Prices fell sharply during 1997 and the first quarter of 1998 due to the impact of the Asian financial turmoil and the weaker yen. By mid-1998 prices had halved to about \$233/m^3 (\$245/m^3 nominal), \$209/m^3 (\$220/m^3 nominal) and \$190/m^3 (\$200/m^3 nominal), record lows for these products. Indonesian and Malaysian export prices firmed in late 1998 due to a stronger yen and an active demand for thin plywood in China, and continued an upward trend during 1999. Real prices for these plywood grades were about \$371/m^3, \$321/m^3 and \$320/m^3, respectively, in late 1999, still some 25% below the highs of 1996. Latin American plywood prices have not shown the same degree of recovery observed for Asian plywood. This is particularly notable in white virola, the most valuable Brazilian plywood export species, which has been relatively stable between \$250/m^3 (\$270/m^3 nominal) and \$281/m^3 (\$295/m^3 nominal) between late 1998 and late 1999, despite volume shortages caused by the closure of some virola

GRAPH 14.5.2

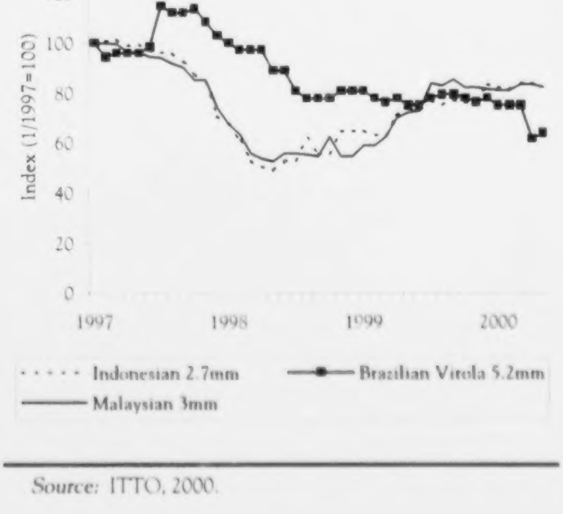
Tropical sawnwood prices, 1997-2000



Source: ITTO, 2000.

GRAPH 14.5.3

Tropical plywood prices, 1997-1999



Source: ITTO, 2000.

plywood mills in the Amazon. Nevertheless, demand for white virola plywood is firming and prices are expected to gradually improve.

14.6 Secondary processed wood products

This section, prepared by ITTO and concentrating on ITTO members is a part of an inter-organization effort to improve the understanding of markets for secondary processed wood products. It complements the analysis in chapter 6. It is hoped that over the next few years, ECE/FAO, ITTO and other partners will be able to improve significantly the quality of data and analysis they make available on SPWPs.

Secondary processed wood products (SPWPs) play an increasingly important role in many tropical countries' forest sectors, in some cases offsetting the recent sharp declines in traditional primary forest products exports. This analysis of SPWPs trade utilizes statistics from the UN Comtrade database.

The primary categories of SPWPs in trade are wooden furniture (the major category, accounting on average for two-thirds of trade values), builder's woodwork (joinery and other builder's wood), products for domestic/decorative use (table/kitchenware, ornaments picture frames, etc.), packaging/pallets, coopers' products (casks, barrels, etc.) and other manufactured products (tools, handles, brooms, shoe lasts, etc.). Since furniture and parts of cane and bamboo have become important tropical forest products exports for many ITTO member countries, the value of these products are also included in this analysis.

14.6.1 Major Importers

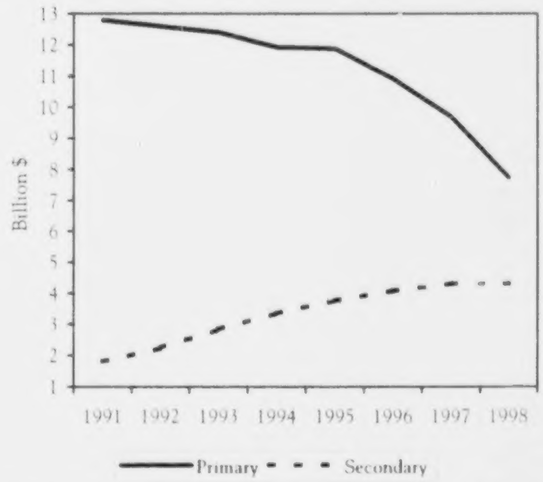
All ten of the world's major SPWPs importers are ITTO consumer members. ITTO consumer country imports of SPWPs from ITTO producers ($4.3 billion) were 15% of total imports of these products from all sources in 1997, an almost constant proportion since 1994. This value was 44% of the total value of primary tropical timber product imports by ITTO consumers in 1997, up from 28% in 1994. This proportion increased in 1998 to over 56% as imports of primary products shrank and those of SPWPs from ITTO producer countries remained stable (graph 14.6.1). Consumer imports from producer countries grew by about 29% between 1994 and 1998, about the same rate of growth as imports from all sources. ITTO consumer imports of SPWPs from other ITTO consumer countries have been constant at about two-thirds of global import value since 1994 and were worth $20.3 billion in 1997.

The top ten ITTO importers accounted for over 88% of ITTO consumer imports of SPWPs from ITTO producers in 1997, down slightly from 89% in 1994. The United States is by far the world's largest single importer of SPWPs and the largest importer from ITTO producer countries. These countries accounted for 20% of its huge $7.8 billion import market for SPWPs in 1997, though this proportion is gradually declining. United States imports come predominantly from other ITTO consumers (62% in 1997). Imports from ITTO consumer countries have more than doubled in value from 1994 to 1998, while imports from producer countries have risen only by 37%.

The EU is the world's largest importer of SPWPs, with its fifteen member states in 1997 importing $15.6 billion worth of these products, led by Germany, France, the United Kingdom, Belgium-Luxembourg, the Netherlands and Austria, which together accounted for over 84% of total EU imports. However, the EU countries import a relatively small proportion (10% in 1997) of their SPWPs from ITTO producer countries. EU imports from ITTO producers have been stable at around 9 to 10% of total SPWPs imports from 1994 to 1997. Although this is a small market share, its value now exceeds $1.5 billion, comparable to United States imports from ITTO producers and more than double the value of Japanese SPWPs imports from ITTO producers. The market share of EU SPWPs imports held by other ITTO consumers has been declining gradually from 71% in 1994 to 65% in 1998. In Germany, the largest EU SPWPs importer ($5.1 billion in 1997), only 7% of the market has been captured by ITTO producers. Japan is the largest market

GRAPH 14.6.1

ITTO Consumer imports of primary and secondary tropical timber products, 1991-1998



Source: ITTO, 2000.

in terms of percentage of imports of SPWPs from ITTO producers. ITTO producers captured 30% of Japan's $2.6 billion market for these products in 1997, still by far the largest share in all of the major markets, despite falling from 37% in 1994. Transportation costs, tariff levels and regional marketing relationships play a role in the differences in market share held by ITTO producers in the major markets for SPWPs, but there is clearly a substantial opportunity for all producing countries to increase their share of the huge European market for these products.

Two-thirds of SPWPs imports by ITTO consumers and by the EU, the leading import region, are wooden furniture. Cane and rattan furniture (18%) and builder's woodwork (mouldings, dowels, etc. (16%)) are far behind as the second and third most valuable types of SPWPs import. France has the greatest proportion of wooden furniture in its SPWPs imports at 74% in 1997.

14.6.2 Major Exporters

Of the top ten exporters of SPWPs as ranked by value in 1997, Italy is by far the world's largest exporter of SPWPs, with over 72% of its exports absorbed by other ITTO consumer countries. Italian exports made up about 32% of the $19.1 billion worth of SPWPs exports of the EU in 1997. The EU accounts for 73% of ITTO consumer exports of SPWPs. Other major exporters include Canada, China, Poland and the United States.

China has experienced rapid growth in SPWPs exports, which almost doubled from 1994 to 1998. This trend is expected to continue, as many companies from Taiwan Province of China and other traditional Asian producers establish furniture and other SPWPs joint ventures in southern China because of its low wages. Combining UN statistics for Taiwan Province of China ($1 billion worth of SPWPs exports in 1997) and China ($2 billion) consolidates China's position as by far the top developing country exporter of SPWPs.

80% of ITTO consumers' 1997 SPWPs exports consisted of wooden and cane/bamboo furniture, mostly shipped to other ITTO consumers. Italy's SPWPs exports are mostly (92%) composed of these categories of furniture, with wooden furniture exports alone valued at almost $5.3 billion in 1997. Cane and bamboo furniture exports from ITTO consumers (where little if any cane or bamboo is grown) were almost $3.5 billion in 1997, compared to only $612 million in total exports of this product by all producer countries.

Indonesia, Malaysia, Thailand, Brazil and the Philippines are the major ITTO producer member exporters of SPWPs, each with exports over $375 million. Other ITTO producer exporters of SPWPs are relatively smaller and include Honduras, Bolivia and India. The top five ITTO producer exporters accounted for 97% of total ITTO producers' SPWPs exports of $4.1 billion in 1997 (up 15% from 1994). To put ITTO producer exports into a global perspective, Italy shipped over $6.1 billion worth of SPWPs to global markets in 1997, about 48% more than the combined value of all SPWPs exports from all ITTO producer countries. ITTO consumer exports increased 27% from 1994 to 1997 while ITTO producer exports increased by only 16%. Exports by both consumers (-4%) and producers (-16%) declined in 1998 due to the economic downturn that was affecting many regions.

Although developing countries enjoy some degree of tariff relief under the Generalized System of Preferences (GSP) or other schemes for SPWPs in many of the major markets, these advantages have been eroded by general tariff reductions in many countries under the Uruguay Round of trade negotiations. Tariffs on SPWPs in many countries remain high, however, compared to those for primary products like logs and sawnwood. This is one reason why the contribution of developing countries to total imports of such products by ITTO consumers is still below their potential. The EU, Japan and the United States apply no import tariffs on SPWPs from GSP countries, while most favoured nation rates range from 2 to 6% on the major product categories. In contrast, many developing countries retain very high tariffs (up to 80%) on these products to protect domestic industries.

Asia Pacific is by far the dominant producing region in terms of SPWPs exports by ITTO producers, with Latin America (primarily Brazil) a distant second. Value-added processing in the African region is still minimal, due largely to a lack of capital and infrastructure, although many African governments such as Ghana, Cameroon and Gabon are making the development of secondary processing a priority. This breakdown between the main tropical regions is unlikely to change significantly, as countries in all three regions continue to express their desire to further expand downstream processing capacity.

After a remarkable export increase of almost 200% from 1991 to 1996, Indonesia's development of downstream processing declined sharply in 1997 and 1998. Indonesia was still the largest ITTO producing country exporter of SPWPs in 1997, with exports over $1.2 billion, though Malaysia was a close second with $1.2 billion and became the largest producer exporter in 1998 when Indonesia's exports crashed with its economy to $739 million. The major categories of Indonesian exports were builder's woodwork (45%) and wooden and cane furniture (29% and 13% respectively) in 1997. Wooden furniture export earnings rose rapidly following Indonesia's log export ban in 1985, from $4.8 million in 1986 to $357.2 million in 1997.

Malaysia's growth of exports of SPWPs between 1994 and 1997 has been the strongest of all producers, expanding from $792.3 million to $1.202 billion. In contrast to Indonesia, Malaysian SPWPs exports are predominantly wooden furniture (75%). About 70% of Malaysian wooden furniture exports are manufactured from rubberwood. Thailand has also linked the development of its furniture industry to its rubberwood resources, with all new sawmill licenses now contingent on use of this material. The ban on logging in Thailand's native forests imposed in 1990 has increased its dependence on imports as well as former rubber plantations for wood supplies; exports of SPWPs have therefore grown more slowly (only 3% from 1994 to 1997) than in Malaysia and Indonesia due to wood supply constraints. Most of Thailand's wooden furniture exports (worth $464 million in 1997) are manufactured at least partially from rubberwood. Both Thailand and Malaysia have been successful in penetrating high value markets with their rubberwood furniture, particularly in Japan. Regulations in both countries favour further processing, restricting exports of raw rubberwood, although the restrictions have been relaxed in Malaysia due to imbalances in domestic supply and demand. Exports from Malaysia and Thailand dropped in 1998 but were not affected as badly as Indonesian exports by the economic downturn.

In contrast to its export performance in 1990-95 when exports grew almost four-fold, Brazil's exports of SPWPs have stabilized at under $500 million, with 58% of these exports composed of wooden furniture and 29% of builder's wood work. Brazil's SPWPs exports go mainly to the major markets of the United States and Europe.

Several apparent anomalies exist in Comtrade statistics reported by trading partners. The statistics reported by the major exporters of SPWPs who reported data to Comtrade can differ substantially from the corresponding import values reported by the major importers of SPWPs. Table 14.6.1 compares the different values reported by the four major producer exporters of SPWPs (in italics) with the import statistics recorded in Comtrade for the EU and ITTO consumers (in bold). The problems identified for some primary products exported by Indonesia also hold for SPWPs, with, for example, a 107% discrepancy with EU import figures. Discrepancies can be due to a number of factors: import figures generally include insurance and freight, while export prices are FOB; partial or non-reporting of exports to Comtrade; differences in measurement methods; differences in reporting periods; smuggling and transfer pricing to avoid taxes; and uncertainty about classification of products. Large discrepancies in reported trade figures should alert governments and industries to the need for remedial action in one or more of these areas.

The development of new processing technologies (e.g. MDF, veneer lamination, etc.) and raw material supplies (e.g. rubberwood) are allowing the use of a wider range of tropical wood species in furniture and other SPWPs production in ITTO producer countries and consequent increases in production and exports. The contribution of SPWPs to the forest sectors of ITTO producers and other developing countries will continue to grow rapidly in coming years, with corresponding reductions in production and especially exports of primary tropical timber products.

14.6.3 SPWPs Prices

After plunging by over 40% (laminated scantlings) and 25% (mouldings) between mid 1997 and mid 1998, real (1990) export prices for most Indonesian SPWPs were relatively stable in late 1998 and 1999 at about \$329/m^3 (\$345/m^3 nominal) for laminated scantlings, \$553/m^3 (\$580/m^3 nominal) for red meranti mouldings

TABLE 14.6.1

Direction of trade of SPWPs for main partners, 1997

(1,000 $)

Exporter Importer	*Indonesia*	*Malaysia*	*Thailand*	*Brazil*	*ITTO producers*
European Union	**779,850**	**206,788**	**145,692**	**299,194**	**1,522,116**
(Reported by exporter)	*375,592*	*170,290*	*121,753*	*264,639*	*1,049,690*
ITTO Consumers	**1,644,176**	**951,510**	**744,020**	**425,074**	**4,313,072**
(Reported by exporter)	*1,006,617*	*900,577*	*678,967*	*422,394*	*3,429,849*

Source: ITTO, 2000.

Grade A and \$434/m^3 (\$455/m^3 nominal) for red meranti mouldings Grade B. Malaysian SPWPs export prices were affected to a lesser extent by the economic crisis in 1997 to 1998, with prices declining by about 10% for laminated scantlings and about 21% for both grades of meranti mouldings. The declining prices for these products were caused by intense price competition between manufacturers in China, Indonesia, Malaysia, Thailand and Vietnam in the face of decreased demand. Malaysian prices for these products were about 10% lower than those from China and Vietnam in late 1998. Malaysian selangan batu decking prices have been less severely hit by competition. Prices declined by 13% from \$570/m^3 (\$618/m^3 nominal) to \$494/m^3 (\$515/m^3 nominal) between September 1997 and March 1998, but have remained relatively stable compared to other SPWPs at around \$510/m^3 (\$535/m^3 nominal) through 1999.

Although prices of value-added products were affected by the Asian economic downturn during 1997 to 1998, the declines were much less severe than the collapse in prices of tropical logs, sawnwood and plywood. Forest sectors in countries such as Indonesia and Malaysia whose export strategies focus on added value products fared better than countries exporting only primary products.

14.7 Conclusion

Tropical timber markets recovered slowly in 1999, with increases in demand for primary tropical products not keeping pace with overall increases in timber consumption in several major markets. China was the exception, sharply boosting demand for tropical logs to feed plywood mills deprived of domestic logs due to a logging ban. Many developing countries in Asia recovered in 1999 and look set to continue growing in 2000, although Indonesia is still struggling. Many tropical countries are now looking to secondary processed wood products to drive their forest sector export recovery, as these products are less susceptible to the sharp price swings that have characterized primary commodity markets in recent years.

Note: Additional statistics for tropical timber are included on the website version of this chapter in: www.unece.org/trade/timber/mis/reports.htm

APPARENT CONSUMPTION TABLES

ANNEX TABLE 1

Sawn softwood apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	4,850	4,320	4,623	4,967	607.4	7.4
Belgium-Luxembourg	1,871	1,875	2,174	1,880	177.7	-13.5
Bulgaria	176	176	176	176	21.3	0.0
Croatia	171	139	218	188	42.0	-13.6
Cyprus	89	85	82	82	104.8	-0.8
Czech Republic	1,824	1,841	2,027	1,940	189.0	-4.3
Denmark	1,809	2,068	4,010	3,636	688.4	-9.3
Estonia	-109	111	175	194	137.6	11.3
Finland	2,375	3,267	3,247	3,652	707.1	12.5
France	8,063	8,291	8,922	9,464	160.7	6.1
Germany	15,985	17,067	16,885	18,121	220.5	7.3
Greece	584	454	465	478	45.0	2.8
Hungary	846	761	724	698	69.3	-3.6
Ireland	662	709	759	898	242.4	18.3
Israel	369	368	368	368	60.3	-0.1
Italy	5,330	5,896	5,925	6,192	108.0	4.5
Latvia	228	511	579	718	300.5	24.0
Lithuania	330	386	588	580	157.6	-1.3
Netherlands	2,678	2,858	2,854	3,296	209.5	15.5
Norway	2,425	2,758	2,752	2,571	578.7	-6.6
Poland	3,829	4,320	4,873	4,690	121.1	-3.8
Portugal	828	879	748	806	81.6	7.7
Romania	369	200	247	352	15.7	42.4
Slovakia	189	231	133	240	44.6	80.7
Slovenia	223	130	327	173	87.2	-46.9
Spain	3,476	3,576	3,635	3,631	91.6	-0.1
Sweden	3,308	4,623	4,033	3,712	417.5	-8.0
Switzerland	1,590	1,354	1,501	1,607	218.8	7.1
The f.Y.R. of Macedonia	30	51	60	79	39.1	31.0
Turkey	2,453	2,129	2,283	2,513	38.3	10.1
United Kingdom	7,431	8,624	8,621	8,856	150.8	2.7
EUROPE	74,369	80,145	84,101	86,844	152.3	3.3
Belarus	823	858	852	870	84.7	2.1
Moldova	82	82	82	82	18.7	0.0
Russian Federation	13,188	12,224	10,984	9,027	61.3	-17.8
Canada	12,978	16,904	17,523	20,641	668.9	17.8
United States	119,060	120,081	122,656	128,470	465.1	4.7
NORTH AMERICA	132,038	136,985	140,179	149,111	485.6	6.4

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 2

Sawn hardwood apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	255	273	292	311	38.0	6.5
Belgium-Luxembourg	745	855	893	373	35.3	-58.2
Bulgaria	44	44	44	44	5.3	1.4
Croatia	84	105	122	136	30.4	11.5
Cyprus	18	18	19	17	22.0	-8.2
Czech Republic	433	337	357	360	35.1	0.8
Denmark	101	56	259	252	47.7	-2.7
Estonia	24	41	21	11	7.5	-49.8
Finland	100	100	106	106	20.4	-0.1
France	3,071	2,832	3,072	3,119	53.0	1.5
Germany	1,393	1,535	1,494	1,908	23.2	27.7
Greece	141	63	72	74	7.0	2.2
Hungary	98	70	-19	-9	-0.9	-50.5
Ireland	41	113	146	160	43.0	9.2
Israel	22	22	21	20	3.3	-1.9
Italy	2,431	2,620	2,796	2,783	48.5	-0.5
Latvia	20	18	88	228	95.4	159.1
Lithuania	56	20	103	116	31.5	12.4
Netherlands	614	596	621	873	55.5	40.5
Norway	85	86	72	84	18.8	16.0
Poland	619	687	876	930	24.0	6.1
Portugal	605	635	544	559	56.6	2.7
Romania	439	423	413	554	24.7	34.0
Slovakia	98	77	291	72	13.4	-75.3
Slovenia	125	124	113	127	64.1	13.1
Spain	1,177	1,555	1,594	1,643	41.5	3.1
Sweden	293	337	352	394	44.3	12.0
Switzerland	134	191	253	234	31.9	-7.5
The f.Y.R. of Macedonia	-27	5	8	8	4.1	-1.4
Turkey	1,789	1,844	1,958	2,018	30.8	3.1
United Kingdom	715	741	596	607	10.3	1.9
EUROPE	15,758	16,437	17,591	18,124	31.8	3.0
Belarus	610	601	600	595	58.0	-0.8
Moldova	56	57	58	58	13.4	1.6
Russian Federation	4,141	3,725	3,747	3,531	24.0	-5.8
Canada	1,069	859	802	795	25.8	-0.9
United States	27,476	28,650	30,653	31,510	114.1	2.8
NORTH AMERICA	28,545	29,509	31,455	32,305	105.2	2.7

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 3

Particle board apparent consumption

(1,000 m^3)

	1996	1997	1998	1999	m^3 per 1000 inhabitants 1999	Change (%) from 1998 to 1999
Austria	741	746	784	934	114.2	19.1
Belgium-Luxembourg	1,382	699	734	686	64.8	-6.5
Bulgaria	122	119	119	115	13.9	-3.1
Croatia	68	77	79	89	19.9	13.1
Cyprus	42	41	40	40	51.5	0.5
Czech Republic	391	447	477	478	46.6	0.2
Denmark	569	672	745	883	167.2	18.5
Estonia	71	93	96	111	78.8	15.9
Finland	433	314	300	295	57.1	-1.7
France	2,461	2,636	2,855	2,904	49.3	1.7
Germany	8,847	9,238	9,425	9,246	112.5	-1.9
Greece	262	269	900	934	87.9	3.7
Hungary	284	341	377	413	41.0	9.5
Ireland	132	157	293	458	123.8	56.5
Israel	124	124	124	124	20.3	0.0
Italy	2,454	3,236	3,390	3,384	59.1	-0.2
Latvia	38	44	42	34	14.2	-19.0
Lithuania	71	75	108	80	21.7	-25.7
Netherlands	547	649	643	794	50.5	23.6
Norway	231	256	268	274	61.7	2.4
Poland	2,024	2,414	2,615	2,237	57.7	-14.5
Portugal	405	307	434	471	47.7	8.5
Romania	288	299	264	295	13.2	11.7
Slovakia	225	257	262	279	51.9	6.5
Slovenia	210	314	335	343	172.3	2.1
Spain	2,167	2,167	3,040	3,125	78.8	2.8
Sweden	693	724	599	633	71.2	5.6
Switzerland	368	347	396	386	52.6	-2.5
The f.Y.R. of Macedonia	158	161	166	171	85.2	3.1
Turkey	1,180	1,722	1,517	1,627	24.8	7.3
United Kingdom	3,094	3,096	3,236	3,113	53.0	-3.8
EUROPE	30,107	32,080	34,703	35,155	61.7	1.3
Moldova	31	31	31	31	7.1	0.0
Russian Federation	1,430	2,302	1,709	1,983	13.5	16.0
Canada	1,857	2,151	1,873	2,682	86.9	43.2
United States	20,186	21,858	24,631	25,810	93.4	4.8
NORTH AMERICA	22,043	24,009	26,504	28,492	92.8	7.5

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 4

Plywood apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	86	88	91	99	12.1	8.6
Belgium-Luxembourg	189	273	224	226	21.4	1.1
Bulgaria	13	22	22	26	3.2	18.2
Croatia	11	8	10	10	2.2	-3.3
Cyprus	8	7	7	7	9.4	-0.7
Czech Republic	63	48	46	44	4.3	-4.3
Denmark	146	169	278	161	30.5	-42.1
Estonia	-4	6	10	21	14.8	102.2
Finland	239	212	186	160	30.9	-14.1
France	703	691	678	666	11.3	-1.8
Germany	1,352	1,391	1,367	1,224	14.9	-10.5
Greece	67	31	29	31	2.9	6.7
Hungary	85	67	49	30	3.0	-38.1
Ireland	38	80	94	101	27.1	6.9
Israel	117	117	117	117	19.2	0.0
Italy	580	601	659	679	11.8	3.1
Latvia	13	11	14	144	60.3	928.6
Lithuania	16	22	26	19	5.2	-25.9
Netherlands	195	341	477	621	39.5	30.1
Norway	81	73	69	71	16.0	2.9
Poland	124	136	149	161	4.2	8.3
Portugal	23	33	35	41	4.2	17.3
Romania	40	35	32	32	1.4	-0.6
Slovakia	71	82	77	-96	-17.8	-225.1
Slovenia	15	22	30	51	25.5	70.4
Spain	169	169	341	326	8.2	-4.4
Sweden	124	144	170	186	20.9	9.5
Switzerland	128	137	140	146	19.9	4.3
The f.Y.R. of Macedonia	76	76	115	155	77.2	33.6
Turkey	85	74	63	52	0.8	-17.5
United Kingdom	967	962	956	950	16.2	-0.6
EUROPE	5,826	6,134	6,580	6,610	11.3	-7.6
Belarus	40	56	56	0	0.0	-100.0
Moldova	1	1	1	1	0.1	0.0
Russian Federation	290	354	395	413	2.8	4.6
Canada	1,693	1,529	1,269	1,088	35.3	-14.2
United States	17,246	16,505	16,863	17,574	63.6	4.2
NORTH AMERICA	18,939	18,034	18,132	18,662	60.8	2.9

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 5

Fibreboard apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	80	109	80	95	11.6	18.5
Belgium-Luxembourg	610	387	321	394	37.2	22.8
Bulgaria	30	55	55	52	6.3	-5.4
Croatia	13	-9	10	13	3.0	27.7
Czech Republic	57	74	92	125	12.2	36.4
Denmark	111	147	307	355	67.3	15.8
Estonia	32	-113	42	41	29.2	-1.7
Finland	100	135	158	176	34.1	11.4
France	227	277	640	661	11.2	3.3
Germany	875	1,686	1,643	1,960	23.8	19.3
Hungary	33	38	24	29	2.9	21.5
Ireland	123	204	187	196	52.9	4.8
Israel	126	161	141	0	0.0	-100.0
Italy	733	424	1,304	1,182	20.6	-9.4
Latvia	1	8	10	16	6.6	58.3
Lithuania	13	25	37	30	8.1	-18.6
Netherlands	252	358	460	536	34.1	16.5
Norway	143	128	134	115	25.8	-14.3
Poland	423	609	692	730	18.8	5.4
Portugal	169	32	160	222	22.4	38.6
Romania	69	46	43	39	1.7	-9.4
Slovakia	47	51	183	88	16.3	-52.0
Slovenia	25	72	88	82	41.0	-7.0
Spain	506	643	1,226	1,307	33.0	6.6
Sweden	163	170	200	249	28.0	24.0
Switzerland	192	201	175	175	23.9	0.3
Turkey	344	616	455	422	6.4	-7.3
United Kingdom	919	1,114	1,288	1,140	19.4	-11.4
EUROPE	7,230	8,250	10,154	10,429	18.3	2.7
Russian Federation	432	639	590	645	4.4	9.2
Canada	615	523	574	558	18.1	-2.8
United States	6,472	6,529	7,584	7,903	28.6	4.2
NORTH AMERICA	7,087	7,051	8,158	8,461	27.6	3.7

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 6

Chemical woodpulp apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	1,275	1,348	1,420	1,355	165.7	-4.6
Belgium-Luxembourg	550	544	560	504	47.6	-10.1
Bulgaria	73	42	42	26	3.2	-37.5
Croatia	9	2	4	4	0.8	-0.2
Cyprus	4	3	3	3	3.3	-18.8
Czech Republic	283	330	367	368	35.9	0.4
Denmark	40	53	46	53	10.0	15.0
Estonia	10	38	42	50	35.4	19.9
Finland	4,310	4,996	5,215	5,261	1,018.7	0.9
France	3,264	3,466	3,398	3,600	61.1	5.9
Germany	3,730	4,053	3,994	3,846	46.8	-3.7
Greece	67	121	126	130	12.2	3.0
Hungary	133	144	170	188	18.7	10.5
Ireland	8	11	17	19	5.0	8.8
Israel	90	107	107	114	18.7	6.7
Italy	2,605	2,885	3,020	3,103	54.1	2.8
Lithuania	5	4	3	2	0.4	-53.5
Netherlands	620	725	831	897	57.0	8.0
Norway	569	646	537	538	121.1	0.1
Poland	799	826	891	897	23.1	0.6
Portugal	683	728	730	702	71.1	-3.9
Romania	191	176	157	136	6.1	-13.1
Slovakia	197	44	229	257	47.7	12.1
Slovenia	151	189	205	205	103.3	0.2
Spain	1,134	1,250	1,430	1,483	37.4	3.7
Sweden	4,657	4,994	4,979	5,028	565.4	1.0
Switzerland	458	444	430	451	61.4	4.9
Turkey	405	483	510	513	7.8	0.6
United Kingdom	1,580	1,633	1,529	1,560	26.6	2.0
EUROPE	27,904	30,323	31,031	31,292	54.9	0.8
Russian Federation	1,577	1,580	1,718	2,341	15.9	36.3
Canada	4,630	4,105	4,079	4,240	137.4	4.0
United States	48,391	50,076	49,952	49,621	179.6	-0.7
NORTH AMERICA	53,021	54,181	54,031	53,861	175.4	-0.3

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 7

Paper and paperboard apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	1,298	2,032	1,985	2,136	261.2	7.6
Belgium-Luxembourg	1,951	2,338	2,736	2,858	270.1	4.4
Bulgaria	178	201	201	212	25.6	5.1
Croatia	386	469	479	484	108.1	1.1
Czech Republic	683	761	782	803	78.2	2.7
Denmark	1,196	1,305	1,311	1,315	249.0	0.3
Estonia	51	54	49	51	36.0	4.8
Finland	2,276	2,220	2,027	2,044	395.8	0.9
France	9,130	9,772	10,743	10,844	184.2	0.9
Germany	15,346	16,148	17,073	17,642	214.7	3.3
Greece	1,067	878	1,053	1,058	99.5	0.4
Hungary	653	1,055	1,156	654	64.9	-43.5
Ireland	650	389	426	427	115.2	0.2
Israel	575	600	609	594	97.4	-2.5
Italy	8,187	9,590	9,592	10,236	178.5	6.7
Latvia	77	75	85	43	18.0	-49.3
Lithuania	85	86	95	83	22.5	-12.4
Netherlands	3,348	3,493	3,894	4,434	281.8	13.9
Norway	992	814	847	729	164.0	-14.0
Poland	1,692	1,992	2,088	2,250	58.1	7.8
Portugal	1,068	1,046	1,057	1,052	106.6	-0.5
Romania	390	336	346	318	14.2	-7.8
Slovakia	277	364	489	507	94.3	3.8
Slovenia	319	40	310	283	142.0	-8.9
Spain	5,407	5,661	6,021	6,377	160.9	5.9
Sweden	2,225	2,387	1,888	1,825	205.3	-3.3
Switzerland	1,481	1,528	1,590	1,736	236.4	9.2
The f.Y.R. of Macedonia	53	43	47	45	22.2	-5.1
Turkey	1,768	2,009	2,075	2,144	32.7	3.3
United Kingdom	11,374	11,906	11,413	11,871	202.1	4.0
EUROPE	73,463	79,211	82,470	85,322	149.6	3.5
Belarus	131	131	131	131	12.8	0.0
Russian Federation	2,212	2,353	2,128	2,751	18.7	29.3
Canada	6,733	6,515	6,722	7,961	258.0	18.4
United States	84,875	79,791	91,611	95,829	346.9	4.6
NORTH AMERICA	91,608	86,306	98,332	103,789	338.0	5.5

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 8

Graphic papers apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	776	902	767	857	104.8	11.7
Belgium-Luxembourg	811	1,063	1,281	1,482	140.1	15.7
Bulgaria	40	40	40	40	4.8	-0.4
Croatia	63	56	61	69	15.4	13.6
Czech Republic	336	354	348	341	33.2	-2.0
Denmark	588	677	686	657	124.4	-4.2
Finland	1,184	1,206	1,259	1,277	247.2	1.4
France	4,711	4,947	5,211	5,239	89.0	0.5
Germany	8,355	8,535	8,721	8,759	106.6	0.4
Greece	347	246	375	354	33.3	-5.8
Hungary	294	719	587	328	32.5	-44.1
Israel	260	260	261	261	42.8	0.0
Italy	3,376	3,709	3,539	3,976	69.3	12.4
Latvia	40	35	43	15	6.2	-65.4
Lithuania	27	33	37	40	10.9	8.7
Netherlands	1,461	1,695	1,858	2,178	138.4	17.2
Norway	567	398	462	454	102.2	-1.8
Poland	767	861	837	887	22.9	6.0
Portugal	393	393	449	465	47.1	3.7
Romania	184	145	128	87	3.9	-32.3
Slovakia	171	208	240	247	46.0	3.0
Slovenia	-25	-160	125	183	91.8	46.0
Spain	2,063	2,147	2,216	2,444	61.7	10.3
Sweden	965	979	694	750	84.3	8.0
Switzerland	795	868	931	964	131.3	3.5
The f.Y.R. of Macedonia	19	17	16	15	7.7	-2.4
Turkey	618	731	732	806	12.3	10.1
United Kingdom	5,789	6,208	6,497	6,788	115.5	4.5
EUROPE	35,012	37,271	38,400	39,974	70.1	4.1
Russian Federation	704	728	651	866	5.9	33.0
Canada	870	1,549	3,099	4,038	130.9	30.3
United States	36,326	38,345	39,078	40,442	146.4	3.5
NORTH AMERICA	37,196	39,894	42,177	44,480	144.8	5.5

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 9

Sanitary and household papers apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	103	109	113	109	13.3	-3.3
Belgium-Luxembourg	83	96	96	71	6.7	-26.4
Bulgaria	10	10	10	10	1.2	0.0
Croatia	151	206	211	207	46.3	-1.5
Czech Republic	23	57	32	37	3.6	15.6
Denmark	2	2	2	3	0.6	57.9
Finland	131	151	109	124	23.9	13.6
France	499	543	533	582	9.9	9.2
Germany	904	909	936	959	11.7	2.5
Greece	241	127	21	24	2.3	12.9
Hungary	46	46	47	48	4.7	0.8
Italy	330	766	813	876	15.3	7.8
Lithuania	0	7	11	8	2.0	-34.2
Netherlands	174	180	175	162	10.3	-7.8
Norway	56	45	14	14	3.0	-1.5
Poland	99	106	113	131	3.4	15.9
Portugal	61	59	64	64	6.5	0.6
Romania	35	35	39	34	1.5	-11.0
Slovakia	74	56	72	81	15.1	11.9
Slovenia	63	55	50	56	28.2	12.0
Spain	320	356	425	444	11.2	4.4
Sweden	234	233	236	208	23.4	-11.8
Switzerland	122	255	218	225	30.6	3.2
Turkey	50	58	73	84	1.3	15.1
United Kingdom	746	801	835	863	14.7	3.3
EUROPE	4,558	5,315	5,295	5,493	9.6	3.7
Russian Federation	147	187	101	101	0.7	0.0
Canada	562	535	547	574	18.6	4.9
United States	5,708	5,915	6,042	6,329	22.9	4.7
NORTH AMERICA	6,270	6,450	6,590	6,903	22.5	4.8

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 10

Packaging materials apparent consumption

(1,000 m^3)

	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	869	930	991	1,052	128.6	6.1
Belgium-Luxembourg	1,427	1,268	1,179	1,187	112.2	0.7
Croatia	82	142	136	134	29.8	-2.1
Czech Republic	324	351	378	405	39.5	7.1
Denmark	543	562	549	570	107.9	3.8
Estonia	26	22	22	19	13.6	-11.4
Finland	673	620	567	514	99.6	-9.3
France	4,244	4,548	4,828	4,898	83.2	1.4
Germany	5,533	5,937	6,341	6,745	82.1	6.4
Greece	350	461	610	633	59.5	3.7
Hungary	255	247	249	253	25.1	1.7
Ireland	361	151	171	178	48.0	4.1
Israel	252	263	270	256	41.9	-5.3
Italy	4,149	4,770	4,865	4,976	86.8	2.3
Latvia	32	28	30	26	11.0	-13.8
Lithuania	33	32	41	33	8.8	-20.5
Netherlands	1,368	1,588	1,808	2,028	128.9	12.2
Norway	327	302	286	289	65.0	0.9
Poland	697	749	891	822	21.2	-7.7
Portugal	539	509	515	485	49.1	-5.7
Romania	159	141	171	171	7.6	-0.1
Slovakia	28	43	127	130	24.2	2.4
Slovenia	259	134	123	38	19.1	-69.1
Spain	2,619	2,835	2,311	2,368	59.8	2.5
Sweden	1,003	1,026	830	750	84.4	-9.6
Switzerland	507	490	516	475	64.7	-7.9
The f.Y.R. of Macedonia	23	17	21	29	14.6	41.9
Turkey	1,105	1,193	1,211	1,198	18.3	-1.1
United Kingdom	3,850	3,761	3,672	3,583	61.0	-2.4
EUROPE	31,636	33,162	33,751	34,308	60.2	1.7
Russian Federation	305	541	964	1,150	7.8	19.3
Canada	3,086	3,131	3,284	3,478	112.7	5.9
United States	34,210	36,463	38,715	40,967	148.3	5.8
NORTH AMERICA	37,296	39,593	41,999	44,446	144.7	5.8

Source: ECE/FAO TIMBER database, 2000.

ANNEX TABLE 11

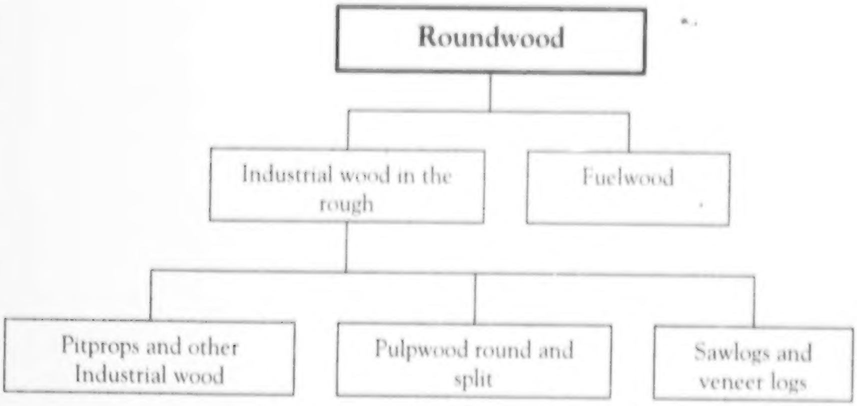
Other paper and paperboard apparent consumption

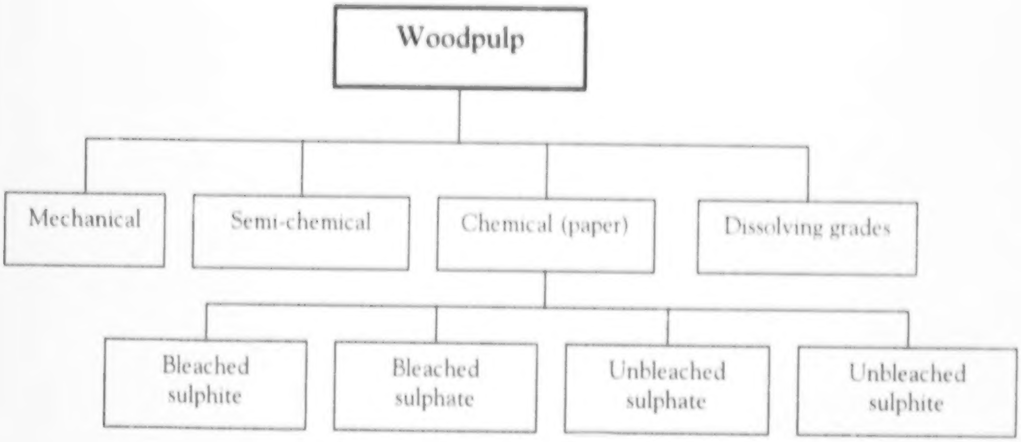
(1,000 m^3)

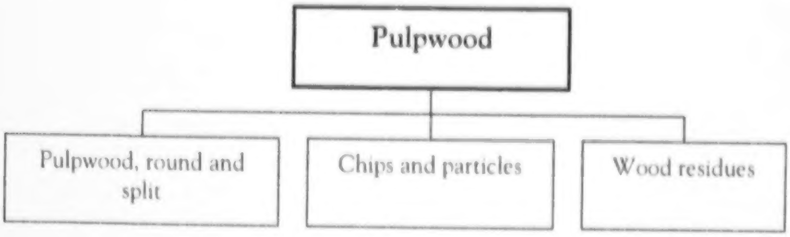
	1996	*1997*	*1998*	*1999*	*m^3 per 1000 inhabitants 1999*	*Change (%) from 1998 to 1999*
Austria	46	111	115	118	14.5	3.1
Belgium-Luxembourg	71	97	181	179	16.9	-1.4
Croatia	91	65	71	74	16.5	4.0
Czech Republic	1	-1	24	20	1.9	-16.7
Denmark	63	64	74	85	16.1	14.9
Finland	410	446	92	129	25.0	41.1
France	238	236	213	197	3.3	-7.3
Germany	986	1,073	1,075	1,129	13.7	5.0
Greece	128	44	46	47	4.5	2.7
Hungary	58	43	274	26	2.5	-90.6
Italy	332	345	376	409	7.1	8.7
Latvia	10	14	13	6	2.5	-54.4
Lithuania	26	14	5	3	0.7	-50.6
Netherlands	-24	-15	52	67	4.2	27.8
Norway	42	69	85	-28	-6.3	-132.7
Poland	283	321	248	410	10.6	65.7
Portugal	74	85	30	37	3.8	24.1
Romania	13	15	7	26	1.2	264.8
Slovakia	3	58	49	48	9.0	-0.1
Slovenia	22	11	12	6	3.0	-50.0
Spain	405	323	417	492	12.4	17.9
Sweden	23	149	128	117	13.2	-8.6
Switzerland	57	-85	-75	72	9.8	-196.0
The f.Y.R. of Macedonia	8	8	0	-3	-1.6	-1350.4
Turkey	31	12	59	56	0.9	-5.1
United Kingdom	516	489	409	638	10.9	56.1
EUROPE	3,997	4,082	4,072	4,482	7.9	10.1
Russian Federation	526	577	412	634	4.3	53.9
United States	43,380	35,607	7,775	8,090	29.3	4.1
NORTH AMERICA	43,318	35,625	7,567	7,960	25.9	5.2

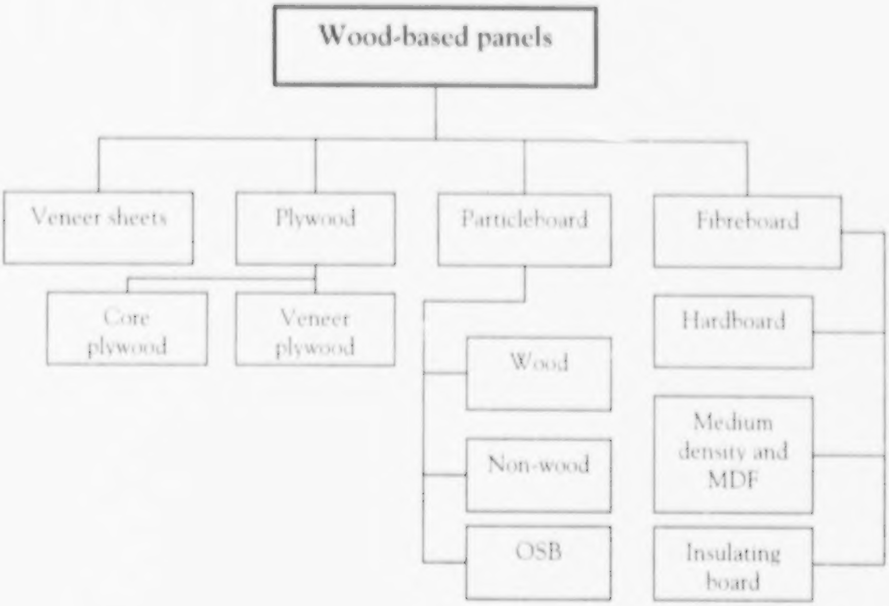
Source: ECE/FAO TIMBER database, 2000.

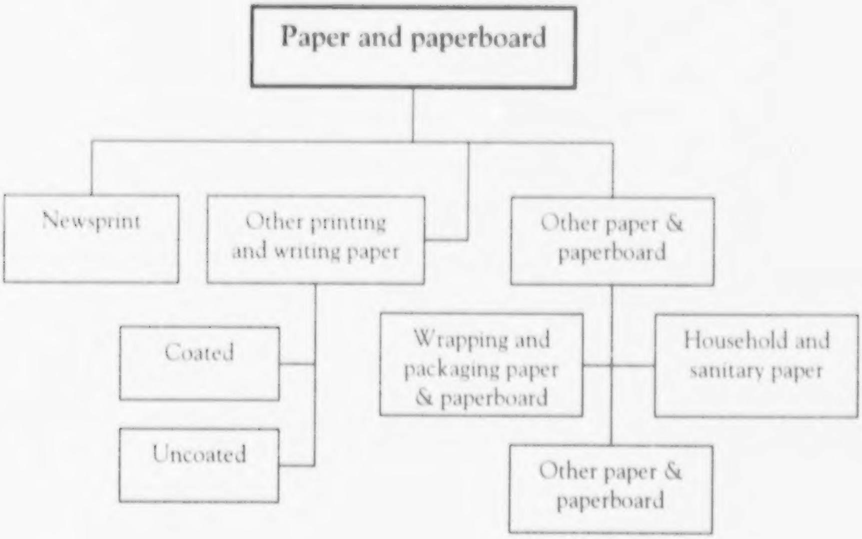
COMPONENTS OF FOREST PRODUCT GROUPS

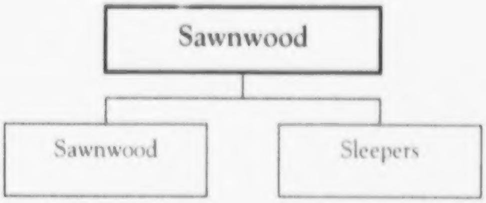

Roundwood
Industrial wood in the rough
Fuelwood
Pitprops and other Industrial wood
Pulpwood round and split
Sawlogs and veneer logs


Woodpulp
Mechanical
Semi-chemical
Chemical (paper)
Dissolving grades
Bleached sulphite
Bleached sulphate
Unbleached sulphate
Unbleached sulphite


Pulpwood
Pulpwood, round and split
Chips and particles
Wood residues


Wood-based panels
Veneer sheets
Plywood
Particleboard
Fibreboard
Core plywood
Veneer plywood
Wood
Non-wood
OSB
Hardboard
Medium density and MDF
Insulating board


Paper and paperboard
Newsprint
Other printing and writing paper
Other paper & paperboard
Coated
Uncoated
Wrapping and packaging paper & paperboard
Household and sanitary paper
Other paper & paperboard


Sawnwood
Sawnwood
Sleepers

FOREST PRODUCTS TERMINOLOGY

GENERAL TERMS

Coniferous (softwood)

All woods derived from trees classified botanically as Gymnospermae, e.g. *Abies* spp., *Araucaria* spp., *Cedrus* spp., *Chamaecyparis* spp., *Cupressus* spp., *Larix* spp., *Picea* spp., *Pinus* spp., *Thuja* spp., *Tsuga* spp., etc. These are generally referred to as softwoods.

Non-coniferous (hardwood)

All woods derived from trees classified botanically as Angiospermae, e.g. *Acer* spp., *Dipterocarpus* spp., *Entandropthagma* spp., *Eucalyptus* spp., *Fagus* spp., *Populus* spp., *Quercus* spp., *Shorea* spp., *Swietonia* spp., *Tectona* spp., etc. These are generally referred to as broadleaves or hardwoods.

Tropical

Tropical timber is defined in the International Tropical Timber Agreement (1994) as follows "Non-coniferous tropical wood for industrial uses, which grows or is produced in the countries situated between the Tropic of Cancer and the Tropic of Capricorn. The term covers logs, sawnwood, veneer sheets and plywood. Plywood which includes in some measure conifers of tropical origin shall also be covered by the definition." For the purposes of this questionnaire, tropical sawnwood, veneer sheets and plywood shall also include products produced in non-tropical countries from imported tropical roundwood. Please indicate if statistics provided under "tropical" in this questionnaire may include species or products beyond the scope of this definition.

TRANSACTIONS

Removals

The volume of all trees, living or dead, that are felled and removed from the forest, other wooded land or other felling sites. It includes natural losses that are recovered (i.e. harvested), removals during the year of wood felled during an earlier period removals of non-stem wood such as stumps and branches (where these are harvested) and removal of trees killed or damaged by natural causes (i.e. natural losses), e.g. fire, windblown, insects and diseases. It excludes bark and other non-woody biomass and any wood that is not removed, e.g. stumps, branches and tree tops (where these are not harvested) and felling residues (harvesting waste). It is reported in cubic metres solid volume underbark (i.e. excluding bark). Where it is measured overbark (i.e. including bark), the volume has to be adjusted downwards to convert to an underbark estimate.

Production

The solid volume or weight of all production of the products specified below. It includes the production of products that may immediately be consumed in the production of another product (e.g. wood pulp, which may immediately be converted into paper as part of a continuous process). It excludes the production of veneer sheets that are used for plywood production within the same country. It is reported in cubic metres of solid volume in the case of roundwood, sawnwood and wood based panels and metric tonnes in the case of charcoal, pulp and paper products.

Imports (Quantity, Value)

Products imported for domestic consumption or processing shipped into a country. It includes imports for re-export. It excludes "In-transit" shipments. it is reported in cubic metres of solid volume or metric tonnes and values normally include cost, insurance and freight (i.e. CIF).

Exports (Quantity, Value)

---

[1] From ECE/FAO/EUROSTAT/ITTO Joint Forest Sector Questionnaire and APA-The Engineered Wood Association

Products of domestic origin or manufacture shipped out of the country. It includes re-exports. It excludes "in-transit" shipments. It is reported in cubic metres of solid volume or metric tonnes and values are normally recorded as free-on-board (i.e. FOB).

PRIMARY PRODUCTS

The names of individual forest products and product aggregates are listed below in the order in which they occur in the tables later on. Separate definitions are not provided for coniferous (C) and non-coniferous (NC) components where the general definition given above applies. Unless indicated otherwise, each forest product category includes both coniferous and non-coniferous components.

Roundwood

All roundwood felled or otherwise harvested and removed. It comprises all wood obtained from removals, i.e. the quantities removed from forests and from trees outside the forest, including wood recovered from natural, felling and logging losses during the period, calendar year or forest year. It includes all wood removed with or without bark, including wood removed in its round form, or split, roughly squared or in other form (e.g. branches, roots, stumps and burls (where these are harvested) and wood that is roughly shaped or pointed. It is an aggregate comprising wood fuel, including wood for charcoal and industrial roundwood (wood in the rough). It is reported in cubic metres solid volume underbark (i.e. excluding bark).

Wood Fuel (Including Wood For Charcoal)

Roundwood that will be used as fuel for purposes such as cooking, heating or power production. It includes wood harvested from main stems, branches and other parts of trees (where these are harvested for fuel) and wood that will be used for charcoal production (e.g. in pit kilns and portable ovens). The volume of roundwood used in charcoal production is estimated by using a factor of 6.0 to convert from the weight (mt) of charcoal produced to the solid volume (m3) of roundwood used in production. It also includes wood chips to be used for fuel that are made directly (i.e. in the forest) from roundwood. It excludes wood charcoal. It is reported in cubic metres solid volume underbark (i.e. excluding bark).

Industrial Roundwood (Wood In The Rough)

All roundwood except wood fuel. In JQ1, it is an aggregate comprising sawlogs and veneer logs; pulpwood, round and split; and other industrial roundwood. It is reported in cubic metres solid volume underbark (i.e. excluding bark). The customs classification systems used by most countries do not allow the division of Industrial Roundwood *trade* statistics into the different end-use categories that have long been recognized in *production* statistics (i.e. saw and veneer logs, pulpwood and other industrial roundwood). Thus, these components do not appear in JQ2. Category 1.2.NCT does not appear in JQ1 as only minimal quantities of tropical industrial roundwood are removed from countries classified as non-tropical (i.e. Australia, China) and all non-coniferous removals in tropical countries fall into this category by definition. Note also that telephone poles (HS code 4403 10) are not separated into coniferous and non-coniferous components in international customs classification systems; please attempt to ascertain the breakdown of any pole trade by examining the product source.

Sawlogs and veneer logs

Roundwood that will be sawn (or chipped) lengthways for the manufacture of sawnwood or railway sleepers (ties) or used for the production of veneer (mainly by peeling or slicing). It includes roundwood (whether or not it is roughly squared) that will be used for these purposes; shingle bolts and stave bolts; match billets and other special types of roundwood (e.g. burls and roots, etc.) used for veneer production. It is reported in cubic metres solid volume underbark (i.e. excluding bark).

Pulpwood, round and split

Roundwood that will be used for the production of pulp, particleboard or fibreboard. It includes: roundwood (with or without bark) that will be used for these purposes in its round form or as splitwood or wood chips made directly (i.e. in the forest) from roundwood. It is reported in cubic metres solid volume underbark (i.e. excluding bark).

Other industrial roundwood

Industrial roundwood (wood in the rough) other than sawlogs, veneer logs and/or pulpwood. It includes roundwood that will be used for poles, piling, posts, fencing, pitprops tanning, distillation and match blocks, etc. It is reported in cubic metres solid volume underbark (i.e. excluding bark).

Wood charcoal

Wood carbonised by partial combustion or the application of heat from external sources. It includes charcoal used as a fuel or for other uses, e.g. as a reduction agent in metallurgy or as an absorption or filtration medium. It is reported in metric tonnes.

Chips and particles

Wood that has been deliberately reduced to small pieces during the manufacture of other wood products and is suitable for pulping, for particle board and fibreboard production, for use as a fuel, or for other purposes. It excludes wood chips made directly (i.e. in the forest) from roundwood (i.e. already counted as pulpwood, round and split). It is reported in cubic metres solid volume excluding bark.

Wood residues

The volume of roundwood that is left over after the production of forest products in the forest processing industry (i.e. forest processing residues) and that has not been reduced to chips or particles. It includes sawmill rejects, slabs, edgings and trimmings, veneer log cores, veneer rejects, sawdust, residues from carpentry and joinery production, etc. It excludes wood chips made either directly (i.e. in the forest) from roundwood or made from residues (i.e. already counted as pulpwood, round and split or wood chips and particles). It is reported in cubic metres solid volume excluding bark.

Sawnwood

Wood that has been produced from both domestic and imported roundwood, either by sawing lengthways or by a profile-chipping process and that, with a few exceptions, exceeds 5 mm in thickness. It includes planks, beams, joists, boards, rafters, scantlings, laths, boxboards, sleepers and "lumber", etc., in the following forms: unplaned, planed, finger-jointed, etc. It excludes wooden flooring, mouldings (sawnwood continuously shaped along any of its edges or faces, like tongued, grooved, rebated, V-jointed, beaded, moulded, rounded or the like) and sawnwood produced by resawing previously sawn pieces. It is reported in cubic metres solid volume. Note that sleepers (HS code 4406) are not separated into coniferous and non-coniferous components in international customs classification systems; please attempt to ascertain the breakdown of any sleeper trade by examining the product source.

Wood-based panels

In JQ1 and JQ2, this product category is an aggregate comprising veneer sheets, plywood, particle board, and fibreboard. It is reported in cubic metres solid volume.

Veneer sheets

Thin sheets of wood of uniform thickness, rotary cut (i.e. peeled), sliced or sawn. It includes wood used for the manufacture of laminated construction material, furniture, veneer containers, etc. It excludes wood used for plywood production within the same country. It is reported in cubic metres solid volume.

Plywood

A panel consisting of an assembly of veneer sheets bonded together with the direction of the grain in alternate plies generally at right angles. The veneer sheets are usually placed symmetrically on both sides of a central ply or core that may itself be made from a veneer sheet or another material. It includes *veneer plywood* (plywood manufactured by bonding together more than two veneer sheets, where the grain of alternate veneer sheets is crossed, generally at right angles); *core plywood* or *blockboard* (plywood with a solid core (i.e. the central layer, generally thicker than the other plies) that consists of narrow boards, blocks or strips of wood placed side by side, which may or may not be glued together); *cellular board* (plywood with a core of cellular construction); and *composite plywood* (plywood with the core or certain layers made of material other than solid wood or veneers). It excludes laminated construction materials (e.g. glulam), where the grain of the veneer sheets generally runs in the same direction. It is reported in cubic metres solid volume. Non-coniferous (tropical) plywood is defined as having at least one face sheet of non-coniferous (tropical) wood. If substantial quantities of mixed (coniferous/non-coniferous) plywood are included in reported statistics, an explanatory note should be provided.

Particle board (including oriented strandboard (OSB))

A panel manufactured from small pieces of wood or other ligno-cellulosic materials (e.g. chips, flakes, splinters, strands, shreds, shives, etc.) bonded together by the use of an organic binder together with one or more of the following agents: heat, pressure, humidity, a catalyst, etc. The particle board category is an aggregate category. It includes particle board; oriented strandboard (OSB) and flaxboard. It excludes wood wool and other particle boards bonded together with inorganic binders. It is reported in cubic metres solid volume.

Oriented strandboard (OSB)

A structural board in which layers of narrow wafers are layered alternately at right angles in order to give the board greater elastomechanical properties. The wafers, which resemble small pieces of veneer, are coated with e.g. waterproof phenolic resin glue, interleaved together in mats and then bonded together under heat and pressure. The resulting product is a solid, uniform building panel having high strength and water resistance. It includes: waferboard and oriented strandboard (OSB). It is reported in cubic metres solid volume.

Fibreboard

A panel manufactured from fibres of wood or other ligno-cellulosic materials with the primary bond deriving from the felting of the fibres and their inherent adhesive properties (although bonding materials and/or additives may be added in the manufacturing process). It includes fibreboard panels that are flat-pressed and moulded fibreboard products. In JQ1 and JQ2, it is an aggregate comprising hardboard; medium density fibreboard (MDF); and insulating board. It is reported in cubic metres solid volume.

Hardboard

Fibreboard of a density exceeding 0.8 g/cm3 It excludes similar products made from pieces of wood, wood flour or other ligno-cellulosic material where additional binders are required to make the panel; and panels made of gypsum or other mineral material. It is reported in cubic metres solid volume.

Medium density fibreboard (MDF)

Fibreboard of a density exceeding 0.5 g/cm3 but not exceeding 0.8 g/cm3 It is reported in cubic metres solid volume.

Insulating board

Fibreboard of a density not exceeding 0.5 g/cm^3. It is reported in cubic metres solid volume.

Wood pulp

Fibrous material prepared from pulpwood, wood chips, particles or residues by mechanical and/or chemical process for further manufacture into paper, paperboard, fibreboard or other cellulose products. In JQ1 and JQ2, it is an aggregate comprising mechanical wood pulp; semi-chemical wood pulp; chemical wood pulp; and dissolving wood pulp. It is reported in metric tonnes air-dry weight (i.e. with a 10% moisture content).

Mechanical wood pulp

Wood pulp obtained by grinding or milling pulpwood or residues into fibres, or through refining chips or particles. Also called groundwood pulp and refiner pulp, it may be bleached or unbleached. It includes chemi-mechanical and thermo-mechanical pulp. It excludes exploded and defibrillated pulp. It is reported in metric tonnes air-dry weight (i.e. with 10% moisture content).

Semi-chemical wood pulp

Wood pulp obtained by subjecting pulpwood, wood chips, particles or residues to a series of mechanical and chemical treatments, none of which alone is sufficient to make the fibres separate readily. It may be bleached or unbleached. It includes semi-chemical wood pulp; chemi-groundwood pulp; and chemi-mechanical wood pulp etc. (named in the order and importance of the treatment during the manufacturing process). It is reported in metric tonnes air-dry weight (i.e. with 10% moisture content).

Chemical wood pulp

Wood pulp obtained by subjecting pulpwood, wood chips, particles or residues to a series of chemical treatments. It includes sulphate (kraft) wood pulp; soda wood pulp and sulphite wood pulp. It may be bleached, semi-bleached or unbleached. It excludes dissolving grades of wood pulp. It is reported in metric tonnes air-dry weight (i.e. with 10% moisture content). If available, statistics for the following four component pulps are also requested: unbleached sulphite pulp; bleached sulphite pulp; unbleached sulphate pulp; and bleached sulphate pulp.

Sulphate unbleached pulp
Sulphate bleached pulp

Wood pulp obtained by mechanically reducing pulpwood, wood chips, particles or residues to small pieces that are subsequently cooked in a pressure vessel in the presence of sodium hydroxide cooking liquor (soda pulp) or a mixture of sodium hydroxide and sodium sulphite cooking liquor (sulphate pulp). It excludes dissolving grades of wood pulp. It is reported in metric tonnes air-dry weight (i.e. with a 10% moisture content). Data for two classes (bleached, including semi-bleached, and unbleached) are requested separately.

Sulphite unbleached pulp
Sulphite bleached pulp

Wood pulp obtained by mechanically reducing pulpwood, wood chips, particles or residues to small pieces that are subsequently cooked in a pressure vessel in the presence of a bisulphite cooking liquor. Bisulphites such as ammonium, calcium, magnesium and sodium are commonly used in this process. It excludes dissolving grades of wood pulp. It is reported in metric tonnes air-dry weight (i.e. with a 10% moisture content). Data for two classes (bleached, including semi-bleached, and unbleached) are requested separately.

Dissolving grades

Chemical pulp (sulphate, soda or sulphite) made from wood of special quality, with a very high alpha-cellulose content (usually 90 percent and over). This type of pulp is always bleached and is readily adaptable for uses other than papermaking. It is used principally as a source of cellulose in the manufacture of products such as synthetic fibres, cellulose plastic materials, lacquers and explosives. It is reported in metric tonnes air-dry weight (i.e. with 10% moisture content).

Other pulps

Pulp manufactured from waste paper or from fibrous vegetable materials other than wood and used for the manufacture of paper, paperboard and fibreboard. In JQ1 and JQ2, it is an aggregate comprising pulp from fibres other than wood and recovered fibre pulp. It is reported in metric tonnes air-dry weight (i.e. with 10% moisture content).

Pulp from fibres other than wood

Pulp manufactured from fibrous vegetable materials other than wood and used for the manufacture of paper, paperboard and fibreboard. It excludes pulp made from recovered paper. It includes pulps made from: straw; bamboo; bagasse; esparto; other reeds or grasses; cotton fibres; flax; hemp; rags; and other textile wastes. It is reported in metric tonnes air-dry weight (i.e. with 10% moisture content).

Recovered fibre pulp

Pulp manufactured from recovered paper or paperboard and used for the manufacture of paper, paperboard and fibreboard. It excludes pulp made from straw; bamboo; bagasse; esparto; other reeds or grasses; cotton fibres; flax; hemp; rags; and other textile wastes. It is reported in metric tonnes air-dry weight (i.e. with 10% moisture content).

Recovered paper

Waste and scraps of paper or paperboard that have been collected for re-use as a raw material for the manufacture of paper and paperboard. It includes paper and paperboard that has been used for its original purpose and residues from paper and paperboard production. It is reported in metric tonnes.

Paper and paperboard

The paper and paperboard category is an aggregate category. In the production and trade statistics, it represents the sum of: graphic papers; sanitary and household papers; packaging materials and other paper and paperboard. Products in this category are generally manufactured in strips or rolls of a width exceeding 15 cm (36 cm for HS 48.13 and 48.19) or in rectangular sheets with one side exceeding 36 cm and the other exceeding 15 cm in the unfolded state. It excludes manufactured paper products such as boxes, cartons, books and magazines, etc. It is reported in metric tonnes.

Graphic papers

The paper and paperboard category is an aggregate category. In the production and trade statistics, it represents the sum of: newsprint; uncoated mechanical; uncoated woodfree and coated papers. Products in this category are generally manufactured in strips or rolls of a width exceeding 15 cm (36 cm for HS 48.13 and 48.19) or in rectangular sheets with one side exceeding 36 cm and the other exceeding 15 cm in the unfolded state. It excludes manufactured paper products such as books and magazines, etc. It is reported in metric tonnes.

Newsprint

Paper mainly used for printing newspapers. It is made largely from mechanical pulp and/or waste paper, with or without a small amount of filler. Weights usually range from 40 to 52g/m2 but can be as high as 65g/m2. Newsprint is machine finished or slightly calendered, white or slightly coloured and is used in reels for letterpress, offset or flexo printing. It is reported in metric tonnes.

Uncoated mechanical

Paper suitable for printing or other graphic purposes where less than 90% of the fibre furnish consists of chemical pulp fibres. This grade is also known as groundwood or wood-containing paper and magazine paper, such as heavily filled supercalendered paper for consumer magazines printed by the rotogravure and offset methods. Excluded: Wallpaper base. It is reported in metric tonnes.

Uncoated woodfree

Paper suitable for printing or other graphic purposes, where at least 90% of the fibre furnish consists of chemical pulp fibres. Uncoated woodfree paper can be made from a variety or furnishes, with variable levels of mineral filler and a range of finishing processes such as sizing, calendering, machine glazing and watermarking. This grade includes most office papers, such as business forms, copier, computer, stationery and book papers. Pigmented and size press "coated" papers (coating less than 5g per side) are covered by this heading. Excluded: Wallpaper base. It is reported in metric tonnes.

Coated papers

All paper suitable for printing or other graphic purposes and coated on one or both sides with carbon or minerals such as china clay (kaolin), calcium carbonate, etc. Coating may be by a variety of methods, both on-machine and off-machine, and may be supplemented by supercalendering. Included: Raw carbon and self-copy paper in rolls or sheets. Excluded: Other copying and transfer papers. It is reported in metric tonnes.

Sanitary and household papers

This covers the stock of a wide range of tissue and other hygienic papers for use in households or commercial and industrial premises. Examples are toilet paper and facial tissues, kitchen towels, hand towels and industrial wipes. Some tissue is also used in the manufacture of babies napkins, sanitary towels, etc. The parent reel stock is made from virgin pulp or recovered fibre or mixtures of these. Final products cut to size or in rolls not exceeding 36cm are excluded here. It is reported in metric tonnes.

Packaging materials

Paper or paperboard mainly used for wrapping and packaging purposes. Excluded: Unbleached kraft paper and paperboard that are no Sack kraft paper or Kraftliner and weighing more than 150 g/m^2 but less than 225 g/m^2; felt paper and paperboard; Tracing papers; not further processed uncoated paper weighing 225 g/m^2 or more. It is reported in metric tonnes.

Case materials

Papers and boards mainly used in the manufacture of corrugated board. They are made from any combination of virgin and recovered fibres and can be bleached, unbleached or mottled. Included are kraftliner, testliner, semi-chemical fluting, and waste-based fluting (Wellenstoff). It is reported in metric tonnes.

Folding boxboard

Often referred to as Cartonboard, it may be single or multiply, coated or uncoated. It is made from virgin and/or recovered fibres, and has good folding properties, stiffness and scoring ability. It is mainly used in cartons for consumer products such as frozen food and for liquid containers.Included: paper and paperboard covered or coated with plastics (excluding adhesives); coated Multi-ply not uniformly bleached throughout the mass. It is reported in metric tonnes.

Wrapping papers

Wrappings (up to 150 g/m2): Papers whose main use is wrapping or packaging made from any combination of virgin or recovered fibres, bleached or unbleached. They may be subject to various finishing and/or marking processes. Included are sack kraft, other wrapping krafts, sulphite and greaseproof papers as well as coated paper and paperboard not uniformly bleached throughout the mass, except Multi-ply. Excluded: Tracing papers. It is reported in metric tonnes.

Other papers mainly for packaging

This category embraces all papers and boards mainly for packaging purposes other than those listed above. Most are produced from recovered fibres, e.g. greyboards, and go for conversion, which in some cases may be for end-uses other than packaging. Included: Composite, not coated, paper and paper board of flat layers stuck together. It is reported in metric tonnes.

Other paper and paperboard

Other papers and boards for industrial and special purposes. This category includes cigarette papers and stock of filter papers, as well as gypsum liners and special papers for waxing, insulating, roofing, asphalting, and other specific applications or treatments. Excluded: All composite, not coated, paper and paper board of flat layers stuck together; coated paper and paperboard not uniformly bleached throughout the mass; paper and paperboard covered or coated with plastics (excluding adhesives). Included: wallpaper base; Unbleached kraft paper and paperboard that are no Sack kraft paper or Kraftliner and weighing more than 150 g/m^2 but less than 225 g/m^2; felt paper and paperboard; Tracing papers; not further processed uncoated paper weighing 225 g/m^2 or more. Raw copying and transfer papers, in rolls or sheets except carbon or self-copy paper. It is reported in metric tonnes.

SECONDARY PROCESSED WOOD PRODUCTS

Further processed sawnwood

Wood sawn or chipped lengthwise (including strips and friezes for parquet flooring, not assembled) and continuously shaped (tongued, grooved, rebated, V-jointed, beaded, moulded, rounded or the like) along any of its edges or faces, whether or not planed, sanded or finger jointed. Excludes: sawn or chipped wood with further treatment of edges and/or faces other than planing, or sanding.

Wooden packaging material

Packing cases, boxes, crates, drums and similar packings, of wood; cable-drums of wood; pallets, box pallets and other load boards, of wood; pallet collars of wood. Casks, barrels, vats, tubs and other coopers' products and parts thereof, of wood, including staves.

Builder's joinery and carpentry of wood

Including windows and doors and coverings thereof as well as cellular wood panels, assembled parquet panels, shingles and shakes.

Wooden furniture

Seats with wooden frames as wooden camping and garden seats etc. and parts thereof. Except: seats convertible into beds, swivel seats, medical seats. Wooden furniture other than seats as of a kind used in offices, in the kitchen, bedrooms and elsewhere, as well as parts of all these.

Prefabricated buildings predominantly made of wood

E.g.: Log cabins, houses predominantly prefabricated from wood-based panels.

Secondary paper products

This group excludes paper in reels and sheets not cut to size included in JQ2. It is an aggregation of all paper products ready for use.

Composite paper and paperboard

Composite paper and paperboard (made by sticking flat layers of paper or paperboard together with an adhesive), not surface-coated or impregnated, whether or not internally reinforced, in rolls or sheets

Special coated paper and pulp products

Paper, paperboard, cellulose wadding and webs of cellulose fibres, coated, impregnated, covered, surface-coloured, surface-decorated or printed, in rolls or sheets. Excluded: Composite paper and paperboard (made by sticking flat layers of paper or paperboard together with an adhesive), not surface-coated or impregnated, but possibly laminated internally with bitumen, tar or asphalt, in rolls or sheets.

Carbon paper and copying paper, ready for use

Carbon paper, self-copy paper and other copying or transfer, duplicator stencils and offset plates, of paper, whether or not put up in boxes. Excluded: Raw carbon, self-copy and other copying or transfer papers in paper in rolls or sheets.

Household and sanitary paper

Products ready for use: toilet paper and similar paper, cellulose wadding or webs of cellulose fibres, of a kind used for household or sanitary purposes, in rolls of a width not exceeding 36 cm, or cut to size or shape; included: e. g. handkerchiefs, cleansing tissues, towels, tablecloths, serviettes, napkins for babies, tampons, bed sheets and similar household, sanitary or hospital articles, articles of apparel and clothing accessories, of paper pulp, paper, cellulose wadding or webs of cellulose fibres. excluded: sanitary paper produced stock.

Packaging cartons, boxes etc.

Cartons, boxes, cases, bags and other packing containers, of paper, paperboard, cellulose wadding or webs of cellulose fibres; box files, letter trays, and similar articles, of paper or paperboard of a kind used in offices, shops or the like.

Other articles of paper and paperboard, ready for use

Products ready for use: e.g.wallpaper and similar wall coverings; window transparencies of paper; floor coverings on a base of paper or of paperboard, whether or not cut to size; all office material like for correspondence, document storage as well as albums, labels of all kinds, bobbins, spools, cops and similar supports of paper pulp, paper or paperboard (whether or not perforated or hardened); all other paper, paperboard, cellulose wadding and webs of cellulose fibres, cut to size or shape; other articles of paper pulp, paper, paperboard, cellulose wadding or webs of cellulose fibres.

Printing and writing paper, ready for use

For example: strips or rolls for office machines, continuous forms

Articles, moulded or pressed from pulp

For example: packaging for eggs

Filter paper and paperboard, ready for use

Printed articles

Printed books

Printed books, brochures, leaflets and similar printed matter, whether or not in single sheets

Newspapers

Newspapers, journals and periodicals, whether or not illustrated or containing advertising material

Other printed articles

Children's picture, drawing or colouring books; music, printed or in manuscript, whether or not bound or illustrated; maps and hydrographic or similar charts of all kinds, including atlases, wall maps, topographical plans and globes, printed; plans and drawings for architectural, engineering, industrial, commercial, topographical or similar purposes, being originals drawn by hand; hand-written texts; photographic reproductions on sensitised paper and carbon copies of the foregoing; unused postage, revenue or similar stamps of current or new issue in the country to which they are destined; stamp-impressed paper; banknotes; cheque forms; stock, share or bond certificates and similar documents of title; transfers (decalcomania); printed or illustrated postcards; printed cards bearing personal greetings, messages or announcements, whether or not illustrated, with or without envelopes or trimmings; calendars of any kind, printed, including calendar blocks; other printed matter, including printed pictures and photographs.

ENGINEERED WOOD PRODUCTS

These definitions come from the APA-The Engineered Wood Association. APA classifies glued engineered wood products into three general groups: 1) glued laminated timber (glulam), 2) structural composite lumber (SCL) consisting primarily of laminated veneer lumber (LVL), but also parallel strand lumber and oriented strand lumber, and 3) wood I-beams.

Glued laminated timber (glulam)

Glulam is an engineered stress-rated product created by adhesively bonding together individual pieces of lumber having a thickness of 50 mm (2 in.) or less. It's one of the most versatile of the engineered wood products. It can be easily shaped into forms ranging from straight beams to complex curved members and is used for a wide variety of structural applications in both residential and nonresidential construction. Glulam is used typically for headers, girders, purlins, beams, arches, and in exposed applications such as bridges, marinas and transmission structures.

Structural composite lumber

Laminated Veneer Lumber (LVL)

LVL is the most widely used of the structural composite lumber products. It is produced by adhesively bonding thin wood veneers together in a large billet so that the grain of all veneers is parallel to the long direction. The LVL billet is then sawn to desired dimensions depending on the construction application. Some of the many uses are in header and beam applications, hip and valley rafters, as scaffold planking and as flange material for wood I-beams.

Parallel Strand Lumber (PSL)

PSL consists of long veneer strands laid in parallel formation and bonded together with an adhesive to form beams. Like LVL and glulam, this product is used for beam and header applications where high bending strength is needed.

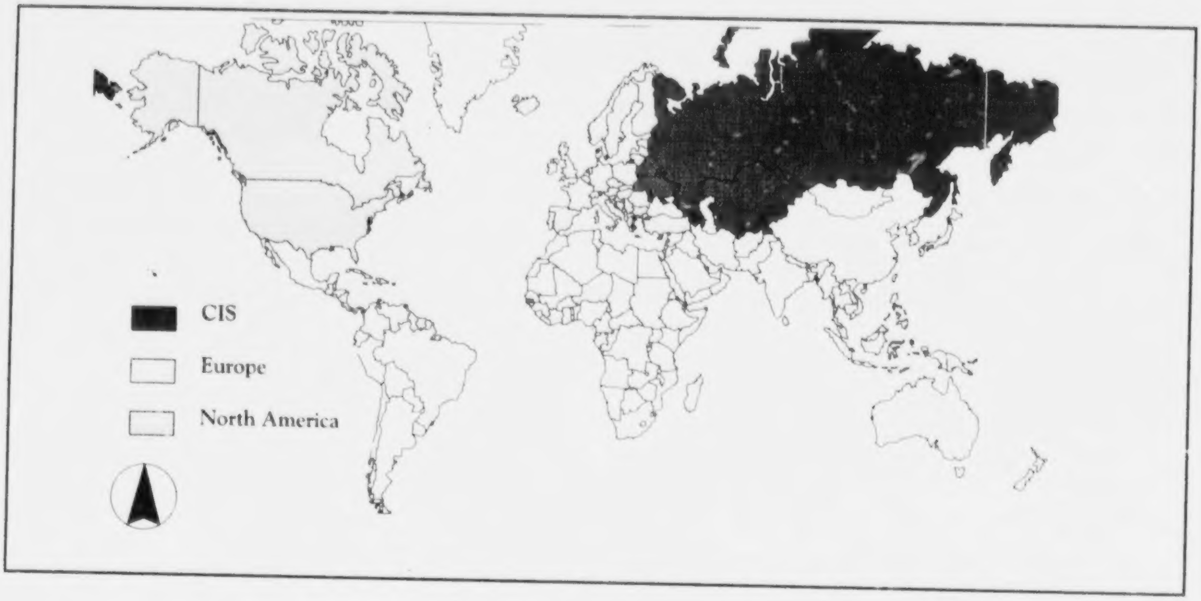
Oriented Strand Lumber (OSL)

Similar to PSL, oriented strand lumber is made from flaked wood strands that have a high length-to-thickness ratio. Combined with an adhesive, the strands are oriented and formed into a large mat or billet and pressed. OSL is used in a variety of applications from studs to millwork components.

Wood I-beams

Wood I-beams are structural, load-carrying products designed mostly for floor joist applications. The beams offer long length and low material weight. Their "I" configuration provides high strength and stiffness. The flange material for I-beams is typically dimension lumber or LVL; the web material is typically oriented strand board (OSB) or plywood. Wood I-beams, used extensively in residential construction, continue to be the fastest growing of the glued engineered wood products.

COUNTRIES IN THE ECE REGION



EUROPE

Albania
Andorra
Austria
Belgium
Bosnia-Herzegovina
Bulgaria
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Iceland
Ireland
Israel
Italy
Latvia
Liechtenstein
Lithuania
Luxembourg
Malta
Monaco
Netherlands
Norway
Poland
Portugal
Romania
San Marino
Slovak Republic
Slovenia
Spain
Sweden
Switzerland
The former Yugoslav Republic of Macedonia
Turkey
United Kingdom
Yugoslavia

COMMONWEALTH OF INDEPENDENT STATES (CIS)

Armenia
Azerbaijan
Belarus
Georgia
Kazakhstan
Kyrgyzstan
Republic of Moldova
Russian Federation
Tajikistan
Turkmenistan
Ukraine
Uzbekistan

NORTH AMERICA

Canada
United States of America

SOURCES OF INFORMATION USED IN *FOREST PRODUCTS ANNUAL MARKET REVIEW*

APA – The Engineered Wood Association, USA, (http://www.apawood.org)

Arborescences, France, (http://www.onf.fr)

Asian Timber, Singapore, (e-mail: schieffer@firstasia.co.sg)

Baltic Timber Journal, Latvia, (e-mail: balti@parks.lv)

Bureau of Labor Statistics, USA, (http://stats.bls.gov)

Canadian Sustainable Forestry Certification Coalition, (http://www.sfms.com)

Centre d'Etudes de l'Economie du Bois, France, (Fax: +33-1-56 69 52 09)

Chilean Forestry News, (http://www.conaf.cl)

Council of Forest Industries, Canada, (http://www.cofi.org)

CSA International, Canadian Standards Association, (http://www.csa.ca)

Eastern Quotes & Comments, USA, (http://www.rctc.com/irland/)

ECE/FAO TIMBER database, (http://www.unece.org/trade/timber)

Engineered Lumber Trends, USA, (http://www.rctc.com/irland/)

EPF – European Panel Federation, (http://www.europanels.org/)

EUROSTAT – EU Statistical Office, (http://europa.eu.int/comm/eurostat)

Fédération Nationale du Bois, France, (http://www.fnbois.com)

Forest Products Journal, USA, (http://www.forestprod.org)

Forêts de France

FSC – Forest Stewardship Council, (http://www.fscoax.org)

Hardwood Market Report, USA, (http://www.hmr.com)

Hardwood Review Export, USA, (http://www.hardwoodreview.com)

Holz Journal, Germany, (http://www.zmp.de/holz/holzjournal/indexhj.htm)

Holz Kurier, Austria, (http://www.holtzkurier.at)

Holz-Forschung & Holz-Verweetung, Austria

Holz-Zentralblatt, Germany, (http://www.holz-zentralblatt.com)

Import Export Purchasing News, USA

International Wood Fiber Report, USA, (http://www.pulp-paper.com)

ISO – International Organization for Standardization, (http://www.iso.ch)

ITTO – The International Tropical Timber Organisation, (http://ww.itto.or.jp)

Jaakko Pöyry Consulting, (http://consulting.poyry.com)

Japan Lumber Journal, (http://www.scan-net.ne.jp/~njlj/index.html)

Japan Lumber Reports, (Fax: +81-3-3820 3518)

Japan Wood-Products Information and Research Center – JAWIC, (Fax: +1-206-625-0482)

La Forêt, Switzerland, (http://www.wvs.ch)

Le Bois National, France, (http://www.boiscope.com/)

Le Commerce International du Bois, France, (http://www.ifrance.com/cib-ltb)

L'Echo des Bois, Belgium, (e-mail: echobois@skypro.be)

Maskayu, Malaysia, (e-mail: mtib@po.jating.my)

MEC Naujienos (Centre of Forest Economics Information Bulletin), Lithuania, (http://www.mec.lt)

METLA – Finnish Forest Research Institute, (http://www.metla.fi)

Ministry of Forest, British Columbia, Canada, (http://www.gov.bc.ca/for)

Monthly Statistics of Japan

New Zealand Forest Industries Magazine, (http://www.nzforest.co.nz)

Newsprint Data, Canada, (http://www.cppa.org/)

NUTEK – Swedish National Board for Industrial and Technical Development, (http://www.nutek.se)

Ohio Division of Forestry, USA, (http://www.hcs.ohio-state.edu/ODNR/Forestry.htm)

PaperTree Letter, USA, (Fax: +1-415-278 5375)

PEFC – Pan European Forest Certification, (http://www.pefc.org)

Perkasa, Malaysia, (e-mail: pusaka@po.jaring.my)

PIMA - Papermaker Magazine, USA, (http://www.pima-online.org/magazine/papermaker.html)

Random Lengths Export, USA, (http://www.randomlenghts.com)

Random Lengths Yardstick, USA, (http://www.randomlenghts.com)

Service des forêts et de la faune Canton de Fribourg, Switzerland

Statistische Bundesamt Preise, Reiche 1; Reiche 2, Germany (http://www.statistik-bund.de)

STEM – Swedish National Energy Administration, (http://www.stem.se)

Swiss Federal Statistical Office, Switzerland (http://www.statistik.admin.ch/)

The Forest Products Conservation & Recycling Review by USDA Forest Service, USA, (http://pc9.fpl.fs.fed.us/documnts/nltrlist.htm)

The Swedish Wood Exporters' Association, (http://www.stef.se)

Timber & Wood Products (TTJ), UK, (http://www.worldwidewood.com)

hardwoodmarkets.com, UK, (e-mail: rjwoliver@email.msn.com)

U.S. Census Bureau – United States Department of Commerce (www.census.gov)

USDA Foreign Agricultural Service, USA, (http://ffas.usda.gov)

USDA Forest Service, USA, (http://www.fs.fed.us)

Weekly Hardwood Review, USA, (http://www.hardwoodreview.com)

Wood Based Panels, UK, (http://www.worldwidewood.com)

Wood Markets Monthly, USA, (http://www.woodmarkets.com)

Wood Products Statistical Roundup by AF&PA, USA, (http://www.afandpa.org)

World Wide Wood, (http://www.worldwidewood.com)

World Wood Review, Canada

WWF – Forests for Life, (http://www.panda.org/forests4life)

ZMP – Zentrale Markt- und Preisberichtstelle für Erzeugnisse der Land-, Forst- und Ernährungswirtschaft GmbH, Germany, (http://www.zmp.de)

SPECIAL CHAPTERS IN FORMER *FOREST PRODUCTS ANNUAL MARKET REVIEWS*

Note to readers: We have found that some chapters of the *Review* have a longer life than the *Annual Market Review*. The following is a listing of all the special chapters, including their most important sections, in order to give an idea of their contents. Back issues are available on the Timber Committee website or through the secretariat.

Timber Bulletin – Volume XLVII (1994)

Chapter 3 "Recycling Wood Fibre and its Effects on the Forest and Forest Industries Sector", 7 pages

Situation analysis and legislation
Quantifying the effects
Consequences and solutions

Timber Bulletin – Volume LI (1998)

Chapter 3 "Certified Forest Products Marketplace", 11 pages, (has since become annual chapter)

Forest certification schemes
Why certification?
Status of supply and demand
Constraints to market development

Chapter 4 "Effects of the Asian Crisis on ECE Region Forest Products Markets", 7 pages

Global and specific impacts on the ECE region
Impacts on the radiata pine trade and other forest products
Japan's forest products production and trade
Indonesia's forest products production and trade in 1997 and 1998

Timber Bulletin – Volume LII (1999)

Chapter 3 "Estonia's Forest Products Market", 7 pages

General economic development
Forest resources
Institutional framework
Forest industry
Trade of wood and wood products

Chapter 4 "New Zealand's Forest Products Market", 7 pages

Background to New Zealand's plantation forestry sector
Market conditions
Forestry production and trade 1998/1999

Chapter 5 "Trade Restrictions and the Future", 10 pages

The question of market access
Trends in tariffs and non-tariff measures
Trade impediments
Implications of further trade liberalization

Chapter 6 "Forest Products in the Electronic Market Place", 6 pages

WWW-sites for forest products trade
North American and European electronic commerce
The role of the ECE Trade Division in electronic commerce

Chapter 13 "Tropical Timber Developments", 16 pages, (has since become annual chapter)

Production, exports, imports
Tropical timber consumption and price trends
Strengthening Asian currencies

SOME FACTS ABOUT THE TIMBER COMMITTEE

The Timber Committee is a principal subsidiary body of the ECE (UN Economic Commission for Europe) based in Geneva. It constitutes a forum for cooperation and consultation between member countries on forestry, forest industry and forest product matters. All countries of Europe; the former USSR; United States of America, Canada and Israel are members of the ECE and participate in its work.

The ECE Timber Committee shall, within the context of sustainable development, provide member countries with the information and services needed for policy- and decision-making regarding their forest and forest industry sector ("the sector"), including the trade and use of forest products and, when appropriate, formulate recommendations addressed to member Governments and interested organizations. To this end, it shall:

1. With the active participation of member countries, undertake short-, medium- and long-term analyses of developments in, and having an impact on, the sector, including those offering possibilities for the facilitation of international trade and for enhancing the protection of the environment;
2. In support of these analyses, collect, store and disseminate statistics relating to the sector, and carry out activities to improve their quality and comparability;
3. Provide the framework for cooperation e.g. by organizing seminars, workshops and ad hoc meetings and setting up time-limited ad hoc groups, for the exchange of economic, environmental and technical information between governments and other institutions of member countries that is needed for the development and implementation of policies leading to the sustainable development of the sector and to the protection of the environment in their respective countries;
4. Carry out tasks identified by the UN/ECE or the Timber Committee as being of priority, including the facilitation of subregional cooperation and activities in support of the economies in transition of central and eastern Europe and of the countries of the region that are developing from an economic point of view;
5. It should also keep under review its structure and priorities and cooperate with other international and intergovernmental organizations active in the sector, and in particular with the FAO (Food and Agriculture Organization of the United Nations) and its European Forestry Commission and with the ILO (International Labour Organisation), in order to ensure complementarity and to avoid duplication, thereby optimizing the use of resources.

More information about the Committee's work may be obtained by writing to:

Timber Section
UN/ECE Trade Division
Palais des Nations
CH - 1211 Geneva 10, Switzerland
Fax: + 41 22 917 0041
E-mail: info.timber@unece.org

Website address: http://www.unece.org/trade/timber

UN-ECE/FAO PUBLICATIONS

Timber Bulletin Volume LIII (2000) ECE/TIM/BULL/53/

1. Forest Products Prices, 1997-1999
2. Forest Products Statistics, 1995-1999 (TIMBER database also available on diskettes)
3. Forest Products Annual Market Review, 1999-2000
4. Forest Fire Statistics
5. Forest Products Trade Flow Data
6. Forest Products Markets in 2000 and Prospects for 2001

Geneva Timber and Forest Study Papers

Forest and forest products country profile: Russian Federation	ECE/TIM/SP/14
(Country profiles also exist on Albania, Armenia, Belarus, Bulgaria, former Czech and Slovak Federal Republic, Estonia, Hungary, Lithuania, Poland, Romania, Republic of Moldova, Slovenia and Ukraine)	
North American timber trends study	ECE/TIM/SP/9
Long-term historical changes in the forest resource	ECE/TIM/SP/10
European timber trends and prospects: into the 21st century (ETTS V)	ECE/TIM/SP/11
Forest and forest industries country fact sheets	ECE/TIM/SP/12
Non-wood goods and services of the forest	ECE/TIM/SP/15
State of European forests and forestry, 1999	ECE/TIM/SP/16
Forest Resources of Europe, CIS, North America, Australia, Japan and New Zealand	ECE/TIM/SP/17

The above series of sales publications and subscriptions are available through United Nations Publications Offices:

Orders from Africa, Europe and the Middle East should be sent to: Sales and Marketing Section, Room C-113 Palais des Nations, CH - 1211 Geneva 10, Switzerland, Fax: + 41 22 917 0027, E-mail: unpubli@unog.ch

Orders from North America, Latin America and the Caribbean, Asia and the Pacific should be sent to: Sales and Marketing Section, Room DC2-853, 2 United Nations Plaza, New York, N.Y. 10017, United States of America, Fax: + 1 212 963 3489, E-mail: publications@un.org

* * * *

The following series of publications may be requested free of charge through:

Timber Section, UN/ECE Trade Division, Palais des Nations, CH - 1211 Geneva 10, Switzerland,
Fax: + 41 22 917 0041, E-mail: info.timber@unece.org

Geneva Timber and Forest Discussion Papers *(original language only)*

Manual on acute forest damage	ECE/TIM/DP/7
Interim Report on the implementation of Resolution H3 of the Helsinki Ministerial Conference on the Protection of Forests in Europe	ECE/TIM/DP/12
The role of women on forest properties in Haute-Savoie	ECE/TIM/DP/13
Recycling, energy and market interactions	ECE/TIM/DP/15
A summary of "The competitive climate for wood products and paper packing: the factors causing substitution with emphasis on environmental promotions"	ECE/TIM/DP/16
Forest certification update for the ECE Region, summer 2000	ECE/TIM/DP/17

International Forest Fire News (two issues per year)

Timber and Forest Information Series

Timber Committee Yearbook 2000	ECE/TIM/INF/7

READER SURVEY

In an effort to continually improve the UN-ECE/FAO *Timber Bulletin*, "Forest Products Annual Market Review," readers are encouraged to express their opinions on its content, presentation and distribution.

Please fax or e-mail your response to the address below. Thank you.

1. Do you like the idea of having special chapters on current issues in forest products markets?
   ___ Yes ___ No

2. Would you like us to continue the series on an ECE region country's forest products markets?
   ___ Yes ___ No

3. Would you like us to continue the series of special chapters which focus on an ECE region trading partner's forest products markets?
   ___ Yes ___ No

4. If yes, do you have any suggestions for topics *and authors* of future special chapters?
   Current market issues ECE region country focus non-ECE region country focus

5. Is the *Review* too long? ___ Yes ___ No. If yes, which chapters would you eliminate or reduce?
6. Did you obtain your copy of the *Review* from the Timber Committee website?
   ___ Yes ___ No
7. If yes to question 6, do you still wish to have a paper publication too?
   ___ Yes ___ No
8. Do you have any suggestions for improvements to either the paper or electronic version of the *Review*?

Thank you again for your time in assisting us to improve the *Review* for our readers! Please return your survey to: info.timber@unece.org or by fax to: +41 22 917 0041

Optional:
Your name:
Organisation:
E-mail:

كيفية الحصول على منشورات الأمم المتحدة

يمكن الحصول على منشورات الأمم المتحدة من المكتبات ودور التوزيع في جميع أنحاء العالم. استعلم عنها من المكتبة التي تتعامل معها أو اكتب إلى: الأمم المتحدة، قسم البيع في نيويورك أو في جنيف.

如何购取联合国出版物

联合国出版物在全世界各地的书店和经售处均有发售。请向书店询问或写信到纽约或日内瓦的联合国销售组。

HOW TO OBTAIN UNITED NATIONS PUBLICATIONS

United Nations publications may be obtained from bookstores and distributors throughout the world. Consult your bookstore or write to: United Nations, Sales Section, New York or Geneva.

COMMENT SE PROCURER LES PUBLICATIONS DES NATIONS UNIES

Les publications des Nations Unies sont en vente dans les librairies et les agences dépositaires du monde entier. Informez-vous auprès de votre libraire ou adressez-vous à : Nations Unies, Section des ventes, New York ou Genève.

КАК ПОЛУЧИТЬ ИЗДАНИЯ ОРГАНИЗАЦИИ ОБЪЕДИНЕННЫХ НАЦИЙ

Издания Организации Объединенных Наций можно купить в книжных магазинах и агентствах во всех районах мира. Наводите справки об изданиях в вашем книжном магазине или пишите по адресу: Организация Объединенных Наций, Секция по продаже изданий, Нью-Йорк или Женева.

COMO CONSEGUIR PUBLICACIONES DE LAS NACIONES UNIDAS

Las publicaciones de las Naciones Unidas están en venta en librerías y casas distribuidoras en todas partes del mundo. Consulte a su librero o diríjase a: Naciones Unidas, Sección de Ventas, Nueva York o Ginebra.

Printed at United Nations, Geneva
GE.00-23236–September 2000–1,775

United Nations publication

ISSN 0259-4323